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ABSTRACT

An external evaluation of the Champaign County (Ohio) Workplace Literacy Project used the Triphase Evaluation process based on Stuffelbeam's decision-making model (1971). During the input phase, emphasis was on determining needs of workers and employers in order to develop a training program to meet specific identified needs. The process phase was designed to determine the level of integration of inputs into procedures yielding the appropriate output. The outcome phase evaluated program impact. Data collection instruments included the following: pre- and post-training participant survey, supervisors surveys and interview forms, and interview protocols for project key staff. Two standardized instruments measured students' progress in improving overall literacy skills: Test of Applied Literacy Skills (TALS) and Adult Basic Learning Examination (ABLE). Evaluation results of three cycles of teaching indicated that Cycle I participants were undecided as to whether the classes helped them to do their job better; however, they improved understanding and ability to use information in textual materials and quantitative skills. On Cycle II, the average participant experienced a similar improvement as that of participants of Cycle I. On Cycle III, the aggregate of all companies moved to a higher proficiency level in the prose section of the TALS test. Supervisors at different sites had different opinions regarding training impacts. Three recommendations were made: assessment instruments should more closely measure the content of the training; outcomes should be clarified; and teachers should be trained in the use of the model. (Appendixes include participant surveys, supervisor surveys, interview protocols, participants' productivity data, and curriculum outline.) (YLB)

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ED 379 438

CHAMPAIGN COUNTY WORKPLACE LITERACY PROJECT
FINAL EVALUATION REPORT

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CHAMPAIGN COUNTY WORKPLACE LITERACY PROJECT
FINAL EVALUATION REPORT

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Champaign County Workplace Literacy Project
Final Evaluation Report

Champaign County Workplace Literacy Project
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Introduction

The Champaign County Workplace Literacy Project was funded through the National Workplace Literacy program. The general purpose of this federally funded program is to provide demonstration projects that teach literacy skills needed in the workplace through exemplary education partnerships between business, industry or labor organizations and educational organizations. The Champaign County Project was developed to address specific RFP priorities related to training adult workers and specific activities that included (d) upgrading/updating basic skills of adult workers in accordance with the changes in workplace requirements, technology, product or process; and (e) improving the competency of adult workers in speaking, listening, reasoning and problem solving. The four major goals of the project are to:

GOAL 1: Provide on-site workplace literacy instruction to a minimum of 300 employees of the four local businesses involved in quality control process,

GOAL 2: Provide basic knowledge and skills necessary to participate in TQM/SPC processes,

GOAL 3: Increase worker productivity leading to improved job maintenance, career advancement and decreased turnover,

GOAL 4: Demonstrate a national rural workplace literacy model that can be replicated and to develop and disseminate a work-based curriculum.

The Champaign County Board of Education, also a member of the County Business Advisory Council, established a collaborative relationship with four(4) local companies to carry out the activities described in the original proposal. The Workplace Literacy project was designed to focus on the workplace literacy training needs of the adult workers of four(4) local companies. A brief description of these companies is provided in the table below.

Company Name	Size* (app.)	Product(s)
Comdyne, Inc.	93	Fiber glass tanks for Natural gas
The Hall Company	48	Custom name plates, Membrane switches,
Grimes Aerospace Industries	850	Lighting (internal and external aeronautics)
LewiSystems	149	Plastic injection molding for recyclable containers

*Estimated number of employees as described at the beginning of the project.

The primary purposes of this project were to provide on-site training to company employees based on the needs of participants, and to design and implement a workplace curriculum that targets job specific skills needed to prepare employees to participate in TQM/SPC processes.

Purpose of the External Evaluation

The requirements of the RFP indicate that the external evaluation should be formative and summative and must be based on student learning gains, the effects of job advancement, job performance and project and product spread and transportability. The purpose of this report is to determine the extent to which the above stated goals and their related objectives were achieved through the activities of this project. This report will provide an objective formative and summate evaluation of the project's activities and outcomes. Sections 1 and 2 of this report will provide a brief descriptive overview of the project. For more detail see the project Final Report. Sections 3 and 4 will provide a description of how the evaluation was conducted, instruments used and the results of data collected. Section 5 summarizes final conclusions drawn from the evaluation report. All materials referenced in the body of this report will appear the appendices.

Section 2

Overview of the Project

Overview of the Project

The purpose of this chapter is to provide a brief overview and limited chronology of the major activities involved in Champaign County Workplace Literacy Project which relate to the data collected through the external evaluation process. The intent is provide the reader with a frame of reference for the context and process used to carry out project activities such that the evaluation results can be understood within a context. For a detail description and explanation of project activities refer to the proceeding sections of project final report.

PROGRAM CONTEXT

The Champaign County Workplace Literacy project operated from the County Board of Education office located in Urbana, Ohio. The project was staffed by a project director (1 FTE), a worksite coordinator(part time), two(2) teachers(part-time), and 1 highly experienced workplace consultant. The project established a Problem Solving Committee comprised of representatives from each of the participating companies. The Problem Solving committee provided on-going input to project staff regarding the perceived needs of company employees, on-going feedback on how those needs could best be met by the project, and their perceptions of the progress of the project. As a result of on-going communications with the participating companies, a second work group of Foremen/Supervisors also evolved. This group provided feedback to project staff regarding their perceptions of the project. In addition, this group was able to exchange and share information relevant to their supervisory roles in their respective companies. This became recognized as an additional benefit derived from being involved in this project.

The companies that participated in this project are all established entities in the Champaign County Community. This rural farm community represents an interesting mixture of agricultural, small family owned and operated services, and commercial businesses. Comdyne, Hall Co., Grimes Aerospace and LewiSystems represent some of the major employers in the community along with other major services such as the local hospital, the School Board, etc. During periods of more economic stability, such companies were viewed as a stable source of employment for individuals and their family members. Most employees were educated in local city/county schools and many remain in these jobs for the majority of their employment careers. As in any organizational structure, each company possessed a unique organizational culture influenced by a combination of factors including, but not limited to, the organization's mission, the philosophy as implemented by the company executives and supervisors, and the influence of a conventional mid-Ohio rural setting.

Over the course of this project, several of the companies experienced a number of changes due to factors including a fluctuation in the economy, the varying demands placed on them for their products, and management decision that were beyond the control of local staff. For example, as a result of down sizing and internal reorganization, one company experienced an across the board reduction in force. A number of individuals who were either involved in the training or served as contacts with project staff were terminated. In another instance, one company was bought out. This is relevant in that it effected the climate within the participating companies, the attitudes of the employees, and their personal interactions.

PROGRAM INPUT

Champaign County Workplace Literacy Project Planning

The initial project planning team consisted of the project director, work site coordinator and consultant. This team obtained input from company representatives to determine global training needs, and engaged in problem solving activities to make decisions regarding the process for selection of teachers, selection of training participants, to determine a process for scheduling classes and for on-going involvement with the participating companies.

The project planning team enlisted the involvement of a company representative to conduct the teacher selection process, including screening and interviewing applicants. Three weeks of teacher training and orientation was conducted prior to the beginning of the first teaching Cycle in August, 1993.

The planning team considered a number of factors related to the changing climate within the participating companies in determining criteria for participant selection. The context included the fact that companies were now more inclined to compete internationally, were engaged, to some extent in implementing TQM and flattening their organizational structure, were placing increased demands on employees related to communication skills, problem solving skills, asking better questions, using more effective documentation and interpretation of documentation. This type of shift in expectations extends beyond the basic knowledge of technical skills that may be learned through vocational/technical training, and basic reading or math skills that may be learned in secondary or post secondary training. It involves being able to utilize processes for making the skills that employees posses work in the work environment.

The team established some generic criteria related to the basic skills involved in workplace literacy, continuous process improvement, improved communication skills, problem solving skills, and the ability to apply those skills to the workplace. The team conducted problem solving committee meetings prior to and during the course of the project to maintain ongoing input and feedback to the project. Additional feedback was obtained from the foremen/ supervisor work group throughout the course of the project.

Other input that influenced project planning and implementation included data collection activities such as:

- conducting the literacy task analysis(LA) on the majority of job classes represented in the training classes,
- administration of assessment instruments including the ABLE, TALs, CLOZE, GAP, Learning Style profile and inventory

Project staff developed lessons based on input from the LTA, basic skills information from assessments, learning styles data, input from the participants relative to their learning expectations and input from foremen/supervisors relative to their perceptions of the participant's learning needs.

During the planning stages, key personnel met with companies individually to discuss site specific details of implementing the classes. This included determining a schedule for conducting the class sessions, identifying specific locations for the classes that were conducive to teaching, making work related materials available to teachers and project staff, obtaining security clearance, where necessary, for project staff and other details.

Project staff also engaged in a number of training and staff development activities throughout the course of the project. These including internal training conducted by the project consultant, external training opportunities available through Wright State University.

PROCESS

Teacher Selection And Training

Project staff utilized the Champaign County Board of Education procedures to advertise for the teaching positions. A limited number of applications were received. It was perceived that this was a result of the positions being part time not full time. Applicants were screened and staff were selected based on their experiences and expertise. Two individuals were selected, both individuals were from the surrounding area and brought different backgrounds and experiences to the project. As the project progressed, it was determined that more time was needed to plan and prepare for classes. Therefore the teacher's work time was increased.

Prior to the selection and training of teachers, key personnel were involved in conducting Literacy Task Analysis of the various job classifications of potential participants. This input along with other information collected from company representatives through discussions and needs assessments was used to design teacher training, to develop initial lessons and lesson plans to be carried out during Cycle I. The teachers participated in 3 weeks of training between June and August, 1993. The training was conducted by the project key personnel and the content focused primarily on metacognition and workplace literacy instruction. Limited emphasis was also placed on adult learning/education. One noted limitation of the training was due to the time frame within which the teachers were brought on board. Teachers had limited opportunities to go on-site or to become familiar with the climate/culture within the companies, to build relationships with the potential participants prior to the start of classes. This was addressed during

subsequent Cycles. Additional time was allocated for teachers to participate in project planning and to go onsite to observe workers in their work environment.

Participant Selection

Prior to each cycle the companies made decisions about the specific job classes that would be involved in the training. A sample listing of the job classes of individuals who participated in the training by company is provided below:

COMPANY	JOB CLASS INVOLVED IN TRAINING
Comdyne	• Detaining • Sanding • Pressure Testing (Valver) • Ring Winding • Lay Up
The Hall Company	• Cutter • Assembler • Screen Printer • Draft person
Grimes	• Analyst • Repair Technician • Receiving • Assembler • Machinist • Model Maker • Contract Assistant • Contract Administrator • Senior Business Administrator
LewiSystems	• Maintenance • Press Operator • Molder • Secondary

The process of identifying and selecting individuals from these job classes to participate in the training each cycle was somewhat complicated. Project staff met with representatives from the problem solving committee to made recommendations regarding the process for selection of employees to participate in the project. During the Cycle I a number of variables appeared to impact how companies made the final decision regarding which employees would participate. It is perceived that some factors were related to production, the number of job classes they wanted represented in the classes, the impact of teams or sections being out of production at the same time, the need to involve management/ supervisory staff in the training, etc. The outcome was that companies used different approaches (volunteer, selection, etc.) to make decisions about who would participate. In some instances there was a diverse representation of job classes involved in the training and in other cases the classes were comprised of limited job classes or limited involvement of management/supervisory staff.

Another issue faced by project staff related to the type of information that selected participants received about the purpose of the project, why/how they were selected, why/how test information and class results would be used, and how/why they would benefit from participating in the training. There was a lack of clarity among many employees who participated in the training particularly during Cycle I regarding what they would be learning, how it would be of benefit to their jobs, whether class tests and other data would be used to determine lay-offs, etc. During subsequent Cycles II and III, the project staff implemented strategies to provide more specific information about the classes to companies. The project staff wanted clarify the purpose and benefits of being involved in the classes.

Implementation Of Training Classes

The project implemented a training scheduled that involved three(3) cycles of teaching lasting for fifteen (15) weeks each. Individuals within each job class selected by the companies participated in one cycle of training. As a result, each company involved a different set of participants in each of the three training

cycles. One exception to this was the participants from LewiSystems. Since the class at LewiSystems met only one day per week. The same group of individuals remained in the training session for two consecutive cycles in order to receive fifteen(15) weeks of training.
The class schedule varied from Cycle I, to II and III. In general the class schedule involved participants in a two hour class on two(2) days per week for a total of four(4) hours of class per week for 15 weeks.

A sample schedule for the two teachers is illustrated in the table below:

Time	Monday	Tuesday	Wednesday	Thursday	Friday
AM	9:00: Hall Company	8:00: LewiSystems Grimes - CBT	9:00: Hall Company	8:00: Grimes CBT	Project Planning
PM	1:00: Grimes - Operations	1:00: Comdyne 1:30: Grimes - Product sup.	1:00: Grimes- Operations	1:00: Comdyne 1:30: Grimes - Product sup. 4:00: LewiSystems	

Training classes were located in a variety of settings ranging from a company conference room to break area influenced by noise, to separate classrooms. As time progressed it became apparent that the learning environment was very important and companies took appropriate measures to provide at least minimally adequate space for the classes. The Hall Company felt that the learning environment was key to the training. They took the initiative to make available a separate classroom facility that was more conducive to the training.

The organizational flow of activities was mostly consistent for each cycle. A break period was established between Cycle I and Cycle II and between Cycle II and Cycle III to facilitate project planning. Project staff used data from assessments, participant surveys, informal discussions, and input from the problem solving committee and foremen/supervisor workgroup to inform the planning process, make adjustments in the processes used and modify instructional materials.

Section 3

External Evaluation Methodology

External Evaluation Methodology

The stated purposes of this external evaluation are 1) to determine the overall effectiveness of the project in implementing the proposed goals and objectives; and 2) to determine the extent to which the training had an impact on the productivity of participants.

Evaluation Design

The basis for the evaluation design used for this external evaluation is the Triphase Evaluation process (Johnson, in press) which is based upon Stuffelbeam's CIPP decision Making Model (1971). The Triphasal process which evaluates input, process and outcome focuses on different aspects of the program. During the input phase emphasis is placed upon determining the needs of workers in the work environment and the needs of employers to influence the development of a training program that will meet those specific identified needs. The evaluation should determine whether good decision making rules were utilized. Baseline data is established through a pre assessment of worker skills/abilities and existing data on productivity.

The process phase is designed to determine the level of integration of inputs into procedures that yield the appropriate output. It focuses upon monitoring the implementation of project objectives, identifying discrepancies between what was planned, what actually happened, and in this case making appropriate adjustments to the training prior to implementing final training activities. The input and process phases are therefore part of the formative evaluation and provide data for program planning, implementation and modification. The outcome phase (summative evaluation) involves evaluating the impact of the program. A summary of the focus of each phase of the evaluation is provided in the table below.

Phase	Focus	Questions to be addressed	Measures used
Input Phase	• Determine needs of participant, employer • Determine expectations of participant, employer • Establish baseline data of participant skills, productivity	• Are the project goals/objectives congruent with the goals and expectations of the participants? • Were good criteria used for the selection of company employees to participate in the training? • Were topics/activities of pertinent to the specific job requirement of participants included in the training? • Was input from appropriate sources used to inform the implementation of the project?	• Pre and post training survey of participants needs/expectations • Pre and post training survey of supervisor/ foremen expectations • Pre and post measures of productivity
Process Phase	• Monitor implementation of project goals, learner goals, • Obtain feedback from participants supervisors, project staff regarding training, • Determine the level of integration of inputs into procedures that yield the appropriate output. • Identifying discrepancies between what was planned, what actually happened. • Make recommendations regarding modifications, adjustments, etc.	• Were appropriate information inputs used in the management of the project? • Were training activities applied effectively? • Were effective management procedures used to make decisions?	• Interviews with project key personnel, • Participant surveys • Interviews with foremen/supervisors

Phase	Focus	Questions to be addressed	Measures used
Outcome Phase	• Evaluation of project objectives/ outcomes • Evaluation of project effectiveness • Make recommendations	• Were the goals and objectives of the project achieved? • Did the training/ intervention meet the workers' skill development needs ? • Did the training impact the workers opportunities for advancement?, • What was the worker's perceived satisfaction with their involvement in the training? • What was the perceived satisfaction of the foremen/supervisors?	• Pre test/posttest comparison of participants performance on the TALs • Pre/post participant surveys • Pre/post foremen/ supervisor surveys
Impact	• What effect were the effects of the training?	• To what extent did the intervention impact the worker's levels of productivity?	• Pre training/post training comparison of productivity data, • Foremen/supervisor surveys

Procedures for Data Collection

Qualitative data collection procedures

The external evaluator met with project staff early in the project to discuss the evaluation porches, to identify the types of data to be collected, to determine who would design forms, collect data, types of products to be reviewed, and a potential time frame for collecting data during cycles I. Ongoing discussions with the project director provided updates on project activities, issues occurring with participating companies, and to determine ongoing data collection for cycles II and III.

Several data collection instruments were developed over the course of the project to assess project implementation activities and to obtain data needed to evaluate the perceived effectiveness of the Workplace Literacy Project. These instruments include the following:

Type of instrument	Purpose
Pre and Post training Participant Survey Form (see Appendix A)	to determine participant's perception of their needs, what they would gain from the being involved in the training, and to determine their perceived satisfaction with the training after completion.
Foremen/Supervisors Surveys and Interview Forms (see Appendix B)	to determine supervisor's perceptions regarding the training needs of participants. to determine supervisors perceptions of critical skills and behaviors of top, average and low performing employees. to identify specific critical behaviors observed in employees who participated in the training. to determine supervisor's perceived satisfaction with the training.

Type of instrument	Purpose
Interview protocols for Project Key staff(see Appendix C)	to determine processes and procedures used to carry out the activities of the project. to determine project staff's perceived strengths and weaknesses of the project. to solicit staff recommendations of strategies that would strengthen the project.

The participant survey was an informal survey presented to each class by the Project staff. Participants were instructed to complete the survey on their own time and return to the teachers. The surveys were to be collected by project teachers and returned to the project evaluator. A post training survey was developed based on the same or similar questions and was to be administered after the completion of each cycle.

A series questionnaires were designed to conduct one-to-one interviews with the participating company foremen/supervisors, project administrative staff and project teachers. At least one company liaison was interviewed from each company. Face to face interviews were also conducted with project administrative staff and with project teachers. The company foremen/supervisors discussed their perceptions of the usefulness of the workplace literacy training, how it would contribute to improvement in skills and behaviors of employees, and it's potential impact on productivity. Project staff interviews focused on the project implementation process including start up, needs assessment, teacher training and overall project management. The information resulting from these interviews and surveys will be reported here to document the effectiveness and impact of the project.

Quantitative data collection procedures

The project staff elected to use two standardized instruments to measure progress of students in improving overall literacy skills. The Test of Applied Literacy Skills (TALS) has two components which measure prose literacy and document literacy on a pre and post basis.

The Adult Basic Learning Examination (ABLE) is a mathematics test with components which measure number operations and problem solving skills also on a pre and post basis. To accommodate the heterogeneous educational backgrounds of the participants, the project staff applied three different levels of the ABLE test.

Test Administration Procedures

Both the TALS and ABLE tests were administered and scored by the project staff. The pre-tests were administered during the first week of classes and the post test during the final week. Two sites did not collect post test data. Grimes at Rt. 55 site did not receive the post test because classes ended earlier than scheduled. The class at the LEWISystems site will complete the 60 hours of training at the end of the second cycle and will receive their post test at that time. It is important to note that upon completion of Cycle I, a number of questions were rained by project staff regarding the use of the ABLE. One problem staff encountered related to the color coding by level of the ABLE response forms. Participants seem to feel that they were being categorized. Another issue was whether the ABLE measured the skill/content being covered in the class. Project staff decided to discontinue use of the ABLE and to use only the TALS as a standardized measure for Cycles II and III. Therefore, the results of the able will only be discussed in relation to Cycle I participants.

Statistical Data Analysis

The statistical analysis of the pre and post tests was done by the project evaluator. The method of analysis was a comparison of matched pairs of the pre and post results and a percentage analysis of the observed

changed during the period. The paired comparison analyzes significance levels of the changes through the use of a t-test at a 95% confidence level.

Section IV provides an overall summary of relevant findings and recommendations in relation to project planning, needs assessment, project implementation, project management, and test results. Appendix A through Appendix D provides a sample instruments used to collect data from each group. Appendix E and Appendix F provides the statistical summary tables of the TALS and ABLE.

Curriculum Materials Review

The project evaluator requested copies of instructional materials, record keeping forms and overview of the curriculum process used by project staff. The following materials were received at various points in the project however the majority were received after Cycle III.

- class syllabus
- Weekly class log form
- Literacy objectives form
- Job skills inventory
- Draft Curriculum Description
- Literacy Task Analysis
- Individual Educational plan form
- Lesson plan format
- Legos exercise
- Draft Workplace literacy Curriculum Outline

After reviewing the Draft Curriculum and reviewing transcripts from teacher interviews, my assessment of the organizational framework used as a basis for instruction of the outlined below:

OBJECTIVE	ACTIVITIES
Orientation and assessment of participant needs/ learning goals	• Data collection including: administration of pre-test(ABLE Cycle I only) (TALs) • Participant surveys administered • Learning styles profiles/inventory • Discussion of participant needs/expectations
Instruction and application Metacognition Transition/Practice Job Application	• Introduction to metacognitive concepts/process, • Introduction of learning styles concepts • Process applications (i.e. problem solving, cooperative learning teams) • Incorporation of basic skills instruction (reading, math, verbal and written communication) • Application of processes and content to job specific activities/projects • Use of individual/group projects related to specific job responsibilities
Post instruction evaluation	• Data collection including: administration of post-test(ABLE Cycle I only) (TALs for cycles II & III) • Participant surveys administered

The sequence of instructional activities as described by project staff was very organized, however staff appeared to maintain a level of flexibility based the perceived needs and readiness of project participants. Given this framework, the basic skills content and instructional materials included differed from class to class. Using assessment data, observations, and other input, teachers were able to determine the basic skills content (e.g. math embedded in language, reading, verbal communication, written communication, math computation, etc.) where participants needed to focus. These content areas were incorporated in the activities in the class. In addition, teachers indicated that they used a variety of materials including:

Type of material	Examples
teacher made	• individual and group learning activities • math and reading activities derived from workplace materials
commercial	• brain teasers • group process activities
workplace materials	• blue prints • shop papers • routing materials

Section 4

Project Evaluation Results

Project Evaluation Results

The purpose of this section is to describe the results of the evaluation based on quantitative and qualitative data collected during the project. This section is organized in three categories Input evaluation, Process evaluation and Outcome evaluation listing the major questions of concern and presenting substantiating documentation.

Input Phase

The focus of the evaluation of this component of the project is to determine whether appropriate input was obtained to inform the decisions made to implement the project. The questions to be answered in the input evaluation are:

Was input from appropriate sources used to inform the planning of the project?

Project staff engaged in several data collection activities in order to gain input from a variety of sources and there is evidence that project staff tapped into all of the key sources of input to inform the planning the project.

Prior to the implementation of the project, staff had access to needs assessment data collected from the County Business Advisory Council. During the early stages of the project staff conducted interviews with foremen/supervisors to identify their general expectations and specific areas of need within specific job classes. A sampling of that data is listed below.

Project Expectations As Described By Company Foremen/Supervisors

Company	General expectations	Specific areas on need
Comdyne	• All workers need to know how to complete and read travelers that accompany each bottle	Inspectors: read blueprints Winders: improve attendance Valvers: read blueprints, math conversion Detailers: measure height, diameter, use scales and calipers
The Hall Company	• Expand basic literacy skills • Understand vocabulary used in industry • Carry out activities independently • Make fewer mistakes	Cutters: improve math, measurements read blueprints Assemblers: read and comprehend instructions, match numbers on blue prints Screen Printers: Skill related to SPC
Grimes Aerospace	• Reading blueprints • Improving quality and productivity	Repair Tec. basic reading, read ATP forms, read customer paperwork Analysts: improve math computation skills, CBT: Teaming skills, problem solving skills Model Makers: Math Assemblers: communication, listening skills
LewiSystems	• gain better opinion of self, self confidence • improve basic skill levels	Maintenance: higher skills Press Operators: basic reading, math, writing Molders: improve reading skills Secondary: reading spec. sheets to set job up.

Project staff conducted on-site visits to participating companies to observe and shadow top workers within the specific job classes of individuals who would be involved in the training. A Literacy Task Analysis (LTA) was conducted on these positions to identify specific job related skills that should be incorporated in the training model. The summary of the LTAs were used to facilitate development of lessons and activities used in teaching the classes during Cycle I.

Project staff established a Problem Solving Committee and a Foremen/Supervisor work group which provided input and feedback to the process on an ongoing basis.

The external evaluators collected additional information from participants and foremen/supervisors regarding their expectation for the training. The table below provides a sample of the most frequent responses that participants made on selected question.

Question	Cycle I	Cycle II	Cycle III
What areas would you like to work on/ or learn?	*Math *Communications *Writing	*Problem solving *Getting along with others/team work *Learn how others think and learn	*Communication *How to work with others
Do you think training help you do a better job	Yes (30/55) no (9/55) Other (16/55)	Yes (15/23) No (5/23) Don't know (3/23)	Yes (16/29) no (4/29) Other (9/29)
Will classes improve your productivity	Yes (19/58) No(11/58) Other (28/58)	Yes(8/23) No(6/23) Don't Know(9/23)	Yes (15/29) No (5/29) Other (9/29)

Company foremen/supervisors were asked to provide feedback regarding their expectations of the project. Their most frequent responses to selected questions are presented in the table below.

Question	Response
What critical skills do the workers in your section of the company need to gain to better perform their tasks?	Communication skills Problem solving skills Team skills Understand instructions Reading
How can the training contribute to increased productivity in your company?	SPC Cross-training skills Assess one's own contributions/self evaluation
What changes in participant's behaviors do you expect to observe as a result of the training?	Collaboration/ team work methods Initiative(going beyond expectation) More communication among team members

The participant and foremen/supervisor interview data was collected in conjunction with interviews with project staff conducted by the external evaluators. A Cycle I preliminary Evaluation Report was submitted to project administrative staff at the end of Cycle I. This report summarized the findings from participants, foremen, project staff and provided recommendation to facilitate planning for Cycles II and III. Many of the recommendations were implemented.

Was adequate information available to develop good criteria used for selection of training program participants?

Project staff obtained information from a variety of sources, and conducted several discussions with company representatives. It appears that sufficient information was available to make appropriate decision regarding who should participate in the training. One issue described by project staff during interviews conducted during Cycle I was that even after several discussions with company representatives, there continued to be some lack of clarity regarding who should be involved in the training, what benefits they could expect to gain and how this information should be conveyed to potential participants. Also, the information communicated to company employees regarding the project was somewhat inconsistent across companies and the process that companies used to select participants was inconsistent.

The perception of key project staff was that companies had not given careful consideration to the impact of having a numbers of staff out of production for an extended period. In conjunction with the Cycle I Interim Evaluation Report the external evaluator made several recommendations including the following:

- Provide a statement that companies can use for recruitment of volunteers or to select participants who will be involved in the training,
- Outline criteria/skills that companies can use to better select potential participants,
- Provide an outline of project goals, general classroom objectives to use with potential participants,
- Continue to provide an orientation session for new participants to clarify understanding of the project.

Were topics/activities pertinent to participant's job requirements identified?

Based on the data obtained from various sources including TALS tests, Learning Styles inventories, participant surveys, foremen surveys and interviews, and materials submitted to the external evaluator for review, the topics/activities were related to the job requirements of participants in a general way.

During Cycle I the content proposed to meet the project goals were described as:

Goal	Content	Training needs as perceived by participants and foremen
Goal 1: Provide on-site workplace literacy instruction to a minimum of 300 employees of the four local businesses involved in quality control process.		•
Goal 2: Provide basic knowledge and skills necessary to participate in TQM/SPC processes,	• Introduction and overview of TQM • Problem solving methodology and tools • Team building and continuous improvement • SPC: understanding graphs, 7 SPC tools and charts • Gathering and interpreting data,	• Basic literacy skills (e.g. Reading, math, writing skills) • Measurement, blue print reading
Goal 3: Increase worker productivity leading to improved job maintenance, career advancement and decreased turnover,	• Metacognition • Cognition: thinking skills, environmental factors, • Social factors • Problem solving, creative thinking, self confidence, stress reduction	• Improved self opinion • Improved self confidence
GOAL 4: Demonstrate a national rural workplace literacy model that can be replicated and to develop and disseminate a work-based curriculum.		

Based on interview data from project staff, it was determined that after Cycle I teachers felt they needed more information to understand the demands /tasks required of participants. Teachers wanted to spend time in the companies learning the culture and understanding various job roles, they wanted to develop a

better understanding of how the LTAs could be used a s a classroom tool. Teachers needed more time together to plan activities and share experiences in order to learn from each other. Observations and information obtained in staff interviews also indicate that as the project progressed, staff continued in staff development activities. Teachers were able to use information learned during Cycle I to improve prove lessons planned and implemented during Cycle II and improve upon Cycle II activities for Cycle III.

Were the project goals/objectives congruent with the goals and expectations of participants/ companies?

It is important to note here that during Cycle I, project staff determined that the goals as originally stated in the proposal should be revised/modified to convey a more focused representation of the scope of work that was doable by the project. Initially the project had elaborated seven(7) project goals that would be accomplished. The broad nature of the goals as stated appeared to be beyond the needs of the project's clients and beyond the scope of the feedback obtained from participants, the problem solving committee and project foremen/supervisors. The revised goals are stated in the table above. Two of the four(4), Goals 2 and 3 are most congruent with the goals and expectations stated by participants and foremen. In achieving Goal 2 project staff were required to teach skills that will enable participants to work more independently and more collaboratively within their work environment. These characteristics in addition to content specific skills were viewed as valuable.

Survey data obtained from company foremen during Cycle II and Cycle III indicate additional skills that facilitate efficiency in the work environment and provide further evidence that these goals are congruent with the goals and expectations of the workplace.

These include:

GOAL	Content	Skills observed perceived by foremen
GOAL 2: Provide basic knowledge and skills necessary to participate in TQM/SPC processes,	• Introduction and overview of TQM • Problem solving methodology and tools • Team building and continuous improvement • SPC: understanding graphs, & SPC tools and charts • Gathering and interpreting data,	
GOAL 3: Increase worker productivity leading to improved job maintenance, career advancement and decreased turnover,	• Metacognition • Cognition: thinking skills, environmental factors, • Social factors • Problem solving, creative thinking, self confidence, stress reduction	• Problem solving • Taking the next step on their own • Resolving problems independently • Team camaraderie • Less mediation by supervisors

Process Phase

Were appropriate information inputs used in the management of the project?

Project staff used a variety of feedback throughout the course of the project. Many of these sources were described under the program Input Section of this report (see pg.4). Interviews with project staff indicated that teachers conducted a variety of activities in preparation for classes to aid them in planning including, a

variety of assessments (e.g.. Job Skills Inventory, Learning Styles Inventory, Lifetime Learning Log, etc. Other sources of feedback are described below.

Participant Feedback

Project staff was requested by the project evaluator to administer and collect the participant pre and post surveys during each of the three cycles. Participants responded to a number of questions related to their learning expectations, job skills needed, and perceived benefits of the training. This information provided additional baseline information that could be incorporated into planning class sessions and post training responses provided feedback regarding the participant's perceived satisfaction with the training and some suggestions for improvements. At the end of Cycle I the feedback from the participant surveys was summarized by the project evaluator in a preliminary report and provided to project managers. Project staff convened a lunch meeting for selected project participants. During the meeting several participants from four companies involved in the training showcased their learnings and provided a critique of the training to project managers and company supervisors.

Feedback from Foremen/Supervisors

Project evaluators conducted several structured interviews with company foremen/supervisors. The purpose of these interviews was to obtain feedback regarding their expectations, their perception of what participants were learning, how it was being applied to the work environment, and their satisfaction with the project. The Project Director was invited to participate in these interviews and to utilize this information to guide changes to the project's activities. Ongoing meetings were conducted with the foremen/supervisor workgroup and the Problem Solving g Advisory Committee. These groups were very instrumental in providing guidance to project administrative staff.

Feedback from Project Evaluators

Project evaluators drafted a preliminary report upon completion of Cycle I. This preliminary report offered an evaluation summary of Cycle I activities from the perspective of project participants, foremen/supervisors, and project staff. It included a summary of standardized test results, and recommendations to project administrators regarding potential modifications that would strengthen project activities.

Were management decisions effective?

There is limited data to support the effectiveness of management decisions beyond information obtained from project staff interviews, personal interactions and observations. However, evidence indicates that the management decisions were effective and benefited the project.

As mentioned above, an interim evaluation report was submitted to project administrative staff at the end of Cycle I which included several recommendation related to project planning and communications, needs assessment and curriculum development, project implementation and project management. Many of these recommendations were incorporated into the overall planning and implementation of the project. For instance, the participant selection process was clarified, the ABLE was discontinued and other more informal assessment measures were incorporated, time was allocated between Cycles I and II for project teachers spend time learning about the companies, ongoing training and planning opportunities were incorporated into the project, and the time equivalent for the project coordinator and teachers was increased to facilitate more opportunities for planning and communications.

Project foremen/supervisors were asked in an interview to provide feedback on their perception of the effectiveness of project staff. The majority of the seven respondents provided positive comments about project staff. Project staff were described as having the following qualities:

* Flexible and interested in knowing the company's environment and problems
* Willing to make changes to meet the company's needs when necessary
* Maintained good communication with companies
* Management meetings provided good opportunity to exchange concerns/suggestions

Overall, the project staff appeared to have established and maintained a good rapport with their contacts within the participating companies. The one staff turnover which occurred near the end of the project appeared to have limited if any impact on the overall operations or implementation of the project.

Were training activities applied effectively?

Evidence to support the effectiveness of training activities indicates that the teachers were effective and that the training had a positive impact on participant's behavior. Data which supports this was gathered through interviews with teachers, training participants and foremen/supervisors. Project teachers participated in a structured interview and responded to questions related to class preparation and instructional implementation. The table below summarizes their responses to selected questions that reflect the processes used to prepare for and deliver instruction.

SELECTED QUESTIONS FROM TEACHER INTERVIEWS (CYCLE III)

Class Preparation:

Question	Teacher A	Teacher B
3. Conceptual preparation for class	• Using outcomes or long term learning goals as a basis for teaching • Allowing for flexibility in class structure to address topics that students suggest in addition to my predetermined goals • Flexibility to teach basic skills needed to learn new concepts • Determining when participants need more (or less) structure	• Determining how to present the problem to the student • Generating ways to help students engage in problem solving • Keeping a log of activities that occur in prior classes to draw from in planning future class activities • Determining when participants need more (or less) structure
4. What teaching strategies or methods used	• Cooperative learning/education (teams monitor their learning) • Jigsaws • Student centered learning • Providing practice opportunities • Peer teaching/coaching (using stronger students to help students experiencing difficulty) • Incorporating examples of work place behavior in teaching • Providing focused application of skills to work environment • Group problem solving • Peer modeling and questioning • Mediated learning (get students to think about and verbalize what they are doing how they do it and how to generalize it to other settings)	• Hands on activities • Numerous practice opportunities • Demonstration • Focused application of skills to work environment • Incorporating examples of work place behavior in teaching • Mediated learning (get students to think about and verbalize what they are doing, how they do it and how to generalize it to other settings) • Cognitive coaching • Problem solving
5. Materials used for class	• Workplace materials (examples include blue prints, shop papers, routing materials, etc.) • Teacher developed materials • Commercial materials	• Workplace materials (examples include blue prints, shop papers, routing materials, etc.) • Teacher developed materials • Commercial materials

INSTRUCTIONAL IMPLEMENTATION

Question	Teacher A	Teacher B
6. Content focus	• Learning styles profiles and learning style inventory • Jigsaws • Math and math embedded in language • TQM concepts • Large group discussion of day's activities	• Metacognative process and it's application to the workplace environment • Communication skills • Problem solving • Basic skills application (reading/math) Location specific topics include: • Handling job stress • Managing work loads and reduced cycle times • Using work related problems/projects to for skill application
7. Teaching TQM/SPC	• In some not all locations	• In some not all locations
8. Sequence of instruction	• Learning styles concepts are presented early, • Practice of concepts until it become a habit. • Thinking styles, thinking about communication and thinking strategies. • Activities that include reading math, basic skills, cooperative learning, team library, jigsaws • Class presentation on some concept learned in class.	• Make a determination of overall class needs • Assess where class is (readiness level, learning styles, etc.) • Obtain input from the class regarding what they want/need to learn
9. Organization (lesson plan format/ individualizatio n/group focus)	• Felt that lesson plans were limiting • No concrete way to determine if objectives are met.	• Conduct assessments • Identify learning needs • Determine learning goals • Teach process approaches (e.g Metacongnitive approach, cognitive coaching, learning styles, problem solving) • Integrate process with content through exercises, practice, team activities, work place projects/activities, etc.
10 Class framework	• Application • Concepts • Problem solving experience • Problem solving, learning styles and communication are emphasized throughout all activities. • The rate of presentation will vary from class to class based on their needs.	• Metacognnition • Transition and practice • Job application(continuous improvement or job revision) • Discussion of what was learned • Feedback from class on how to improve the activity.
11. Percent time on major concepts: (general approximation)	• Problem solving most • Learning styles most • Communication skills written some • Communication skills verbal some • Basic skills (math/reading) some	• Application most • Practice most • Process most • Demonstrating some
14. How do you measure outcomes?	• Observation of class behavior, teamwork, cooperative/learning • Anecdotal comments from participants about how they apply what they learn to situations outside of the learning environment.	• Job skills inventory (pre and post) • Anecdotal comments from participants that demonstrate how they use skills learned in class in other situations. • Use problem situations from the work environment as cases in class.

Additionally, teachers met regularly to plan and discuss activities carried out in their respective classes, they observed and provided feedback to each other and received feedback from the project director and project consultant.

Feedback from project foremen/supervisor interviews further supports their perception of the effectiveness of training activities. A summary of foremen/supervisor responses to selected questions is provided below:

What Critical Skills do the workers in your section need to better perform their tasks? (pre training survey)

- problem solving
- design
- team skills
- quality,
- programming, etc.

Your sense of what participants are learning? (post training)

- participants learned how others think
- how to communicate with others differently,
- participants learn that they have an obligation to the listener.
- participants learn to take the risk to speak out.
- participants show respect for others
- learned that another's opinion is worthwhile
- participants learned that individuals learn differently,

What skills have you seen participants apply?(post training)

- problem solving, taking the next step on their own,
- team camaraderie
- increased comprehension
- increased confidence has increased their ability to take the initiative.
- participants require less mediation by supervisors,
- participant's minutes has changed

The perceptions of foremen/supervisors support that the training was effectively implemented.

Outcome Phase

Were the goals and objectives of the project achieved?

Goal 1: Provide an on-site workplace literacy instruction to a minimum of 300 employees of the four local business involved in quality control process

The four companies located in the Champaign County that participated in the project are: LewiSystems, Grimes Aerospace, The Hall Company and Comdyne. Based on data requested from project staff the following table shows the number of employees that participated in the workplace literacy instruction project according to site (Grimes Aerospace had participants at separate instructional classes at different sites) and training cycle.

Company/Site	Number of Employees Trained			
	Cycle I	Cycle II	Cycle III	Total
Comdyne	11	10	19	40
Grimes - Rt. 55 - Operations	22	--	--	22
Grimes - Rt. 55 - CBT	10	11	8	29
Grimes - Twain Ave. - Prod. Supt.	14	15	--	29
Grimes - Russell Street	--	22	39	61
Hall Company	19	18	16	53
LewiSystems*	8	8	5	21
Total	**84**	**84**	**87**	**255**

* Participants at LewiSystems during Cycles I and II were the same. Classes extended over two cycles with one-half of the hourly load per week.

Note: data presented on this table is based on figures received from project staff.

The project goal was to reach a minimum of 300 participants. The instruction reached 255 participants. The instruction did not reach the goal number due to unexpected circumstances which were outside of the project's control. Such external factors were related to the local companies' restructuring and downsizing. During the project period, several participants were laid off from all company sites. This restructuring of the companies affected the availability of employees that could participate in the training from some of the smaller companies, and/or reduced the amount of employees willing to participate in the training from several sites.

Project staff utilized proactive strategies to disseminate information about training classes both within the companies and to audiences external to the project. We can conclude that one of the main reasons to which the project was short of reaching the established goal for number of participants can be attributed to circumstances that were beyond the project's control.

Goal 2: Provide basic knowledge and skills necessary to participate in TQM/SPC processes.

Goal 3: Increase worker productivity leading to improved job maintenance, career advancement and decreased turnover (skills that lead to increased worker productivity as laid out by the workplace literacy project)

Goals 2 and 3 were analyzed together because several overlapping skills, which are identified in both Goals, were evaluated by the same procedure by project evaluators. Goal 3's identified skills that lead to increased productivity are measured by the same tests and interview/surveys utilized by the analysis of Goal 2. The measurement of productivity gain and job maintenance will be analyzed separately.

To meet the project goal of involving workers in TQM/SPC processes (Goal 2), the project staff planned to instruct the following items:

- understanding of graphs and charts,
- interpreting data,
- creating charts,
- application of data to problem solving,
- units of measure,
- SPC tools,
- instruction and overview of TQM,
- problem solving methodology,
- problem solving tools,
- team building,
- continuous improvement.

To meet the project goal of increasing workers' productivity (Goal 3), the project team designed the following instruction items:

- metacognition (including oral language, written language, mathematics, math embedded in language, reading),
- cognition/metacognition (including thinking skills, environmental factors, social factors, problem solving, creative thinking, self-confidence, stress reduction).

To assess this outcome's achievements, evaluators utilized standardized tests (ABLE, TALS) and pre- and post- interviews and surveys with foremen/supervisors of the training participants. Workers development of items such as written language, mathematics, math embedded in language, reading, interpreting data, application of data to problem solving and units of measure was assessed by the analysis of standardized pre- and post-tests. All other items were analyzed through perceptions and qualitative assessments obtained through interviews and pre- and post-training surveys completed by foremen and supervisors which were collected by the evaluators throughout the project.

Standardized Tests

The pre- and post- analysis of the standardized tests was performed by using two basic methods: *interpreting the scores* obtained by the students according to a manual (TALS Administration and Scoring Manual) and by *statistical analysis* of the tests' raw data (t-test of paired means and percentages). For more details on the methods of analysis, please refer to Section 3 - External Evaluation Methodology.

The three components of the TALS test (prose, document, and quantitative) were utilized to measure a broad profile of the basic skills of the participants. The **prose** test related to the Goal 2 of the project by providing a measure of reading and written language skills. Prose tested the students' knowledge and skills needed to understand and use information contained in various kinds of textual material (Education Testing Service, 1991). Three skills were tested: locating information in text, and integrating and generating information from text. The **document** component of the test was used to measure workers' skills in processing information from documents. More specifically, this test was used to measure the workers literacy skills to locate and use information contained in materials such as tables, schedules, charts, graphs, maps and forms, which are part of the instruction items on Goal 3. The **quantitative** component of the test provided a measure of participants skills to perform basic mathematics operations and use numbers embedded in printed materials (skills required for Goals 2 and 3).

Components of the *Tests of Applied Literacy Skills* (TALs)

Prose	Document	Quantitative
Understand and use information contained in various textual materials.	Process information found in documents.	Complete quantitative tasks such as arithmetic operations and use numbers embedded in printed materials.
Skills identified in the project **Goal 3**: • reading; • written language.	Skills identified in the project **Goal 2**: • understanding graphs and charts; • gathering data; • interpreting data; • units of measure.	Skills identified in the project **Goals 2 and 3**: • mathematics; • math embedded in language.

Interpreting scores (TALS):
To use as a reference for participants' skills development, we compared their results of pre- and post- tests to the national difficulty level score as an identifier of difficulty of general tasks for each test component.

Average National Difficulty Levels

Prose	Document	Quantitative
Locating information in text: **293**	Locating information in documents: **242**	Addition tasks: **235** Subtraction tasks: **298**
Integrating information from text: **325**	Cycling through information in documents: **308**	Multiplication: **318** Division tasks: **326**
Generating information from text: **372**	Integrating information in documents: **318**	Combination tasks: **363**

It is important to note that the national difficulty levels serves in this study exclusively to provide a reference for analysis of what tasks the participants likely improved from the training. The pre- and post-test statistical analysis of the raw data (next subsection) provided information which complements the test score analysis.

An analysis by test component follows.

Prose Component:
On Cycle I, Comdyne, Grimes - CBT, and LewiSystems moved to a higher proficiency level (Table 1). Grimes CBT was the only class to surpass the national average at the most difficult task (generate information from text). On Cycle II, Comdyne, Grimes Twain Ave., and Grimes - Russell Street moved to a higher proficiency level by surpassing the national difficulty level on integrating information from text. On Cycle III, the aggregate of companies moved to a higher proficiency level. All classes experienced an increase in their mean scores, with the highest growth experienced by the class at Comdyne.

Document:
The document component has the lowest national difficulty level of the three components. And all classes presented a pre-test proficiency level on the most difficult task: integrating information in documents (Table 2). However, the average results for all companies was low and did not improve significantly on any of the three cycles.

Quantitative:
On Cycle I quantitative skills were measured by using the ABLE test. The results of the ABLE test will be presented and discussed in the statistical analysis of the raw data. On Cycles II and III, the document component of the TALS test was adopted by the project team to measure quantitative skills of participants.

The quantitative component of the TALS test has several proficiency levels (addition, subtraction, multiplication, division, and combination tasks). Grimes CBT class on Cycle I surpassed the national difficulty level on all tasks (Table 3). Comdyne (classes of cycles II and III), Grimes Russell Street a.m. and p.m. classes (cycle III) stayed at an intermediate proficiency level equivalent to the average multiplication and division national difficulty level. The Hall company experienced notable progress in this area on Cycles II and III.

Statistical Analysis of the Raw Data
The analysis of the raw data does not provide an estimate of which specific concepts were mastered by the students between the time they took the pre- and the post- test. However, it provides an indication of the change that occurred during the period in the number of absolute correct responses and its significance according to a pre-determined confidence level (please refer to Chapter 3 - Evaluation Methods for more detailed information).

Prose:
The aggregate result of all participants demonstrates a statistically significant growth on all cycles (Table 4). In other words, students had, in average, scored more points on the post-test when compared to the pre-test results for all cycles on the prose component. However, individual classes may have experienced a reduction or stayed at a same level of response level between pre- and post-tests. Cycle III is where the growth was more noticeable.

Document:
As it was discussed on the "Score" analysis, the document component was the item in which the aggregate of all participants did not experience growth (Table 5). In reality, on Cycle III, the aggregate of all classes shows a statistically significant decrease on the average score (raw data) from pre- to post-test.

Quantitative:
On Cycles I and II, the aggregate of all classes experienced a statistically significant increase in scores (raw data) between the pre- and post-tests (Table 6). On Cycle III, results are not conclusive for all classes. On Cycle I, Comdyne, Grimes - Twain Ave. and the Hall Company experienced significant increase in scores (raw data). On Cycle II, Comdyne, Grimes, the Hall Company and specially Grimes - CBT experienced statistically significant increases in scores. Grimes - Twain Ave. (Cycle II) was the only class to experience a reduction on the score from pre- to post-test.

Relationship between TALS' Results and Project Goals 2 and 3

As discussed earlier, the standardized tests measured some of the instructional skills present in Goals 2 and 3 of the Project. Reading and written language are part of Goal 3 (Increase worker productivity leading to improved job maintenance, career advancement and decreased turnover). According to the TALS results, reading was one of the skills in which growth was experienced across all project cycles for the aggregate data (data aggregated for all classes during each cycle). In terms of proficiency levels, six classes achieved results that placed them on higher national difficulty levels. Participants reading skills were positively affected by their participation on this training.

Results on quantitative skills, which are skills included in Goals 2 and 3, showed general growth on Cycles I and II. Results generated for Cycle III are inconclusive.

The standardized test results on document skills, related to PC processes (Goal 2), indicate the participants did not experience significant growth as a result in participating in the project.

Table 1 - TALS - Prose (Scale Score)

Companies	Cycle 1			Cycle 2			Cycle 3		
	N	Pre-Test Mean	Post-Test Mean	N	Pre-Test Mean	Post-Test Mean	N	Pre-Test Mean	Post-Test Mean
Comdyne	10	321	332	11	322	333	8	288	354
Grimes - CBT	8	370	390	4	358	363			
Grimes - Twain Ave.	14	319	312	13	330	338	data not available		
Grimes - Rt. 55	data not available								
Grimes Russel St.				15	329	357			
Grimes Russel St. a.m.							14	318	345
Grimes Russel St. p.m.							17	18	21
Grimes Russel St. - Supervisors							data not available		
The Hall Company	18	354	344	15	356	345	14	337	349
Lewis Systems*	3	313	337						
All Companies	50	340	340	58	343	351	53	322	350

Notes:

N = Number of respondents

Analysis performed on TALs test's scale score.

Shaded areas: Company did not participate in the program during specific cycle.

* LewiSystems: this class met two hours per week on a six month period

Table 2 - TALS - Document (Scale Score)

Companies	Cycle 1			Cycle 2			Cycle 3		
	N	Pre-Test Mean	Post-Test Mean	N	Pre-Test Mean	Post-Test Mean	N	Pre-Test Mean	Post-Test Mean
Comdyne	10	300	312	10	304	323	8	340	324
Grimes - CBT	8	340	349	6	333	347			
Grimes - Twain Ave.	14	316	312	12	314	316	data not available		
Grimes - Rt. 55	data not available								
Grimes Russel St.				19	326	332			
Grimes Russel St. a.m.							16	321	328
Grimes Russel St. p.m.							19	307	326
Grimes Russel St. - Supervisors							data not available		
The Hall Company	18	331	339	17	329	319	14	338	335
Lewis Systems*	3	347	327						
All Companies	50	322	328	64	326	330	57	323	328

Notes:
N = Number of respondents
Analysis performed on TALs test's scale score.
Shaded areas: Company did not participate in the program during specific cycle.
* LewiSystems: this class met two hours per week on a six month period

Table 3 - TALS - Quantitative (Scale Score)

Companies	Cycle 2			Cycle 3		
	N	Pre-Test Mean	Post-Test Mean	N	Pre-Test Mean	Post-Test Mean
Comdyne	10	307	324	7	319	313
Grimes - CBT	7	333	371			
Grimes - Twain Ave.	13	368	355	data not available		
Grimes - Rt. 55						
Grimes Russel St.	18	354	346			
Grimes Russel St. a.m.				16	323	326
Grimes Russel St. p.m.				16	326	328
Grimes Russel St. - Supervisors				data not available		
The Hall Company	17	316	339	14	326	348
Lewis Systems						
All Companies	65	332	340	53	324	329

Notes:

N = Number of respondents

Analysis performed on TALs test's scaled scores.

Shaded areas: Company did not participate in the program during specific cycle.

TALS quantitative test was not applied on Cycle I

Table 4 - Raw Data Statistical Analysis: TALS - Prose

Companies	Cycle 1					Cycle 2					Cycle 3				
	N	Pre-Test Mean	Post-Test Mean	% change	Sig.	N	Pre-Test Mean	Post-Test Mean	% change	Sig.	N	Pre-Test Mean	Post-Test Mean	% change	Sig.
Comdyne	10	17.80	18.90	6.18%	N	11	18.82	18.64	-0.97%	N	8	19.38	21.75	12.26%	N
Grimes - CBT	8	21.88	24.00	9.69%	Y	4	21.00	21.50	2.38%	N					
Grimes - Twain Ave.	14	16.64	16.86	1.32%	N	13	20.38	22.15	8.68%	Y	data not available				
Grimes - Rt. 55	data not available														
Grimes Russel St.						15	18.13	21.40	18.01%	Y					
Grimes Russel St. a.m.											14	18.29	20.57	12.47%	Y
Grimes Russel St. p.m.											17	17.76	21.29	19.84%	Y
Grimes Russel St. - Supervisors											data not available				
The Hall Company	18	20.33	20.50	0.84%	N	15	20.60	20.40	-0.97%	N	14	18.83	21.14	12.27%	Y
Lewis Systems*	3	17.00	20.00	17.65%	n.a.										
All Companies	50	19.04	19.72	3.57%	Y	58	19.60	20.79	6.07%	Y	53	18.45	21.13	14.53%	Y

Notes:

N = Number of respondents

Analysis performed on TALs test's raw score.

Statistical tests perfomed on "t-Test Paired Two-Sample for Means."

Confidence level: 95% on one-tail test.

Shaded areas: Company did not participate in the program during specific cycle.

* LewiSystems: this class met 2 wours per week, on a six month period

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Table 5 - Raw Data Statistical Analysis: TALS - Document

Companies	Cycle 1					Cycle 2					Cycle 3				
	N	Pre-Test Mean	Post-Test Mean	% change	Sig.	N	Pre-Test Mean	Post-Test Mean	% change	Sig.	N	Pre-Test Mean	Post-Test Mean	% change	Sig.
Comdyne	10	20.90	21.30	1.91%	N	10	20.30	23.10	13.79%	Y	8	24.25	22.38	-7.71%	Y
Grimes - CBT	8	24.13	23.75	-1.57%	N	6	23.50	23.67	0.72%	N					
Grimes - Twain Ave.	14	21.29	21.29	0.00%	n.a.	12	24.50	23.33	-4.76%	N	data not available				
Grimes - Rt. 55	data not available														
Grimes Russel St.						19	22.84	22.58	-1.14%	N					
Grimes Russel St. a.m.											16	22.50	22.38	-0.53%	N
Grimes Russel St. p.m.											19	22.74	22.26	-2.11%	N
Grimes Russel St. - Supervisors											data not available				
The Hall Company	18	23.17	23.06	-0.47%	N	17	22.82	21.82	-4.38%	N	14	24.07	23.00	-4.45%	Y
Lewis Systems*	3	24.67	22.67	-8.11%	n.a.										
All Companies	53	22.34	22.32	-0.09%	N	64	22.81	22.70	-0.48%	N	57	23.21	22.49	-3.10%	Y

Notes:

N = Number of respondents

Analysis performed on TALs test's scaled score.

Statistical tests perfomed on "t-Test Paired Two-Sample for Means."

Confidence level: 95% on one-tail test.

Shaded areas: Company did not participate in the program during specific cycle.

* LewiSystems: this class met 2 wours per week, on a six month period

Table 6 - Raw Data Statistical Analysis: TALS - Quantitative

Companies	Cycle 1*					Cycle 2					Cycle 3				
	N	Pre-Test Mean	Post-Test Mean	% change	Sig.	N	Pre-Test Mean	Post-Test Mean	% change	Sig.	N	Pre-Test Mean	Post-Test Mean	% change	Sig.
Comdyne	10	49.50	51.90	4.85%	Y	10	14.10	16.20	14.89%	Y	7	15.71	17.29	10.06%	N
Grimes - CBT	8	62.38	66.50	6.60%	N	7	17.00	20.43	20.18%	Y					
Grimes - Twain Ave.	11	48.91	52.00	6.32%	Y	13	20.31	18.85	-7.21%	Y	data not available				
Grimes - Rt. 55	data not available														
Grimes Russel St.						18	17.17	16.33	-4.89%	N					
Grimes Russel St. a.m.											16	16.06	16.31	1.56%	N
Grimes Russel St. p.m.											16	16.56	16.38	-1.09%	N
Grimes Russel St. - Supervisors											data not available				
The Hall Company	19	53.16	58.74	10.50%	Y	17	15.82	17.94	13.40%	Y	14	16.64	18.07	8.59%	N
Lewis Systems															
All Companies	48	52.71	56.36	6.92%	Y	65	16.95	17.68	4.31%	Y	53	16.32	16.92	3.68%	N

* Please note that on Cycle 1, the standardized test utilized was the Adult Basic Learning Exam (ABLE). Data represents raw data on "Total Math."

Notes:
Analysis performed on TALs test's raw score.
Statistical tests perfomed on "t-Test Paired Two-Sample for Means."
Confidence level: 95% on one-tail test.
Shaded areas: Company did not participate in the program during specific cycle.

Interviews and Surveys

The interviews and surveys administered throughout the project provided information regarding several instructional items not covered by the standardized tests. Such items are: in Goal 2, introduction and overview of TQM, problem solving methodology, problem solving tools, team building, continuous improvement; in Goal 3, cognition and metacognition (thinking skills, environmental factors, social factors), problem solving, creative thinking, self-confidence, stress reduction.

Surveys and Interviews with Foremen/Supervisors

From surveys and interviews with foremen performed at the end of Cycle II, we obtained the following feedback regarding observed skills participants obtained from training:

Grimes Twain Avenue

Observed Improved Skills/Behaviors (from foremen interviews/surveys)	Relationship with Project Goals 2 and 3
Communication skills: "More interaction on work floor. Learning how everybody else thinks help workers understand each other. Supervisors need to interfere less in the workers interactions."	Goal 3: Metacognition (oral language) Cognition (environmental factors, social factors) Self-confidence Stress reduction
Knowledge of the overall: foremen/supervisor indicated that in general the training provided workers with an improvement on the knowledge they have of the overall process.	Goal 2: Team building and continuous improvement.
Problem solving: "...for example at the reception area, they try to solve problems themselves. Workers that have been involved in the training take the initiative to solve problems."	Goal 3: Problem solving Goal 2: Problem solving methodology Problem solving tools.
Teamwork: foremen/supervisor indicated that in general workers acquired better team work skills as a result of the training.	Goal 2: Team building
Reading: foremen/supervisor indicated that training provided workers with better reading skills.	Goal 3: Metacognition (learning how to learn, including "reading")

The Hall Company

Observed Improved Skills/Behaviors (from foremen interviews/surveys)	Relationship with Project Goals 2 and 3
Communication skills: "The training has helped by breaking down department barriers and allowing employees to be at easy with communicating with others."	Goal 3: Metacognition (oral language) Cognition (environmental factors, social factors) Self-confidence Stress reduction
Problem solving: "Better problem solving by the individual worker who now feels that they can make decisions on their own."	Goal 3: Problem solving Goal 2: Problem solving tools Problem solving methodologies
Teamwork: foremen/supervisor indicated that in general workers acquired better team work skills as a result of the training.	Goal 2: Team building
Basic skills on other jobs: foremen/supervisor indicated that in general the training provided workers with an improvement on the knowledge they have of the overall process.	Goal 2: Team building and continuous improvement

Comdyne

Observed Improved Skills/Behaviors (from foremen interviews/surveys)	Relationship with Project Goals
Communication skills: "Good communication (between workers and supervisors). Project staff participated in management meetings and concerns/suggestions were exchanged." "Greater acceptance of other's jobs/limitations, ask others for help (between workers)."	Goal 3: Metacognition (oral language) Cognition (environmental factors, social factors) Self-confidence Stress reduction
Problem solving: "Workers solve problems themselves. Less problems to be mediated by management level."	Goal 3: Problem solving Goal 2: Problem solving tools Problem solving methodologies
Teamwork: "Improvement in setup for next production line. Previously workers would walk away. Now they show interest."	Goal 2: Team building

LewiSystems

Observed Improved Skills/Behaviors (from foremen interviews/surveys)	Relationship with Project Goals
Communication skills: "Some participants improved their communication skills."	Goal 3: Metacognition (oral language) Cognition (environmental factors, social factors) Self-confidence Stress reduction
Problem solving: "Some participants improved their problem solving skills."	Goal 3: Problem solving Goal 2: Problem solving tools Problem solving methodologies
Team work: "Some participants improved their teamwork skills."	Goal 2: Team building
Knowledge of the overall process: "Some participants gained knowledge of the overall process."	Goal 2: Team building and continuos improvement
Basic literacy: "All participants increased their basic literacy skills."	Goal 3: Metacognition (learning how to learn, including "reading") Goals 2 & 3: Mathematics, math embedded in language.

Grimes - Russell Street

Observed Improved Skills/Behaviors (from foremen interviews/surveys)	Relationship with Project Goals
Communication skills: "Better communication. Now people "listen and hear." People seek clarification. There is better understanding of each other. Keeps people from going on wrong directions on task, or doing it twice because they were not listening well before."	Goal 3: Metacognition (oral language) Cognition (environmental factors, social factors) Self-confidence Stress reduction
Stress management skills: "Lay-offs set people back here. Stress management skills were very helpful to cope with lay-offs. The project was very good to help us through this tough phase."	Goal 3: Stress reduction
Problem solving skills: "Workers developed better ways of doing same tasks. They are thinking "outside of the box", finding alternative ways of doing tasks, smart ways, learning from each other." "Require less problems to be mediated by management level staff."	Goal 3: Problem solving Goal 2: Problem solving tools Problem solving methodologies

Post-training Surveys from Training Participants

At the end of the training, participants were asked whether they had a better understanding of how to use Statistical Process Controls (SPC) and Total Quality Management (TQM) on their jobs. The response frequencies are depicted below:

Do you have a better understanding of how to use SPC on your job?
Cycle I

	Yes	No	Other
Comdyne	2	6	0
Grimes-Twain	7	3	0
Hall Company	11	1	1
Total	**20**	**10**	**1**

Cycle III

	Yes	No	Other
Comdyne	7	2	0

Do you have a better understanding of how to use TQM on your job?
Cycle I

	Yes	No	Other
Comdyne	3	4	0
Grimes-Twain	4	5	0
Hall Company	11	1	1
Total	**18**	**10**	**1**

Cycle III

	Yes	No	Other
Comdyne	4	6	0

In general, Cycle I and Cycle III respondents indicated that they had a better understanding of how to use SPC and TQM on their jobs. Comdyne being the only exception on Cycle I. On Cycle III, Comdyne participants indicated that they had a better understanding of how to use SPC on their job.

To conclude, from the standardized tests, which cover literacy, document, and quantitative general areas of knowledge, the overall results indicate that all training classes remained at their original proficiency level or moved to a higher proficiency level during the period of time between the dates in which the pre- and the post-tests were submitted (beginning and end of training respectively).

From the interview and survey results, we conclude that the project's main accomplishments are in the areas of improving participants communication, problem solving and team work skills. These instructional items are components of Goals 2 and 3 of the project.

Goal 4 - Demonstrate a national rural workplace literacy model that can be replicated and to develop and disseminate a work-based curriculum.

The project evaluators received only a draft outline and draft copy of the Workplace Literacy Curriculum. Based on draft information received to date, the curriculum being developed is based on the principles the project utilized during the training period. The principles were developed based on the project's assessment that "global economic concerns demand employees who demonstrate a high level of competence to deal with complexity and change."[1]

It is the project's belief that to answer to such demands, the traditional teaching methods have to be changed. The project's answer to this question is a curriculum model which assimilates the complex

[1] From Workplace Literacy Curriculum - Explanation, Development, and Thematic Issues/Lesson Plan - draft

workplace environment and utilizes cognitive thinking and student-directed learning with cooperative education methods (please refer to Appendix E for a summary of the curriculum model as proposed by project staff).

Did the training impact the workers opportunities for advancement?

During the period covered by the three training cycles, the participant companies experienced restructuring and downsizing of their organizations. This reorganization during the training period, translated into several employees being laid off from all company sites. Company downsizing negatively affected employees' opportunities for advancement. Since company restructuring is external to training and may overshadow the training impact, the opportunities for advancements were not evaluated.

Did the training / intervention meet the workers' skill development needs?

The answer to this evaluation question can be obtained by comparing the responses obtained on item six of the pre-training participant survey (What educational areas would you like to work on?) with the responses obtained on item four of the participants' post-training surveys (Were the educational areas that you wanted to work on addressed in the class?). A problem posed to this analysis is that not all sites completed the post-training surveys. Project evaluators received 35 completed surveys on Cycle I (from three sites), none on Cycle II, and 10 from Cycle III (one site only). The respondents response frequency is presented in the table next page.

Cycle I
Needs Assessment input from project participants obtained from pre-training survey on Cycle I. "What job skills do you need to work on?"

Skills	Hall	Grimes*	Comdyne	Total
Technical skills related to my job	4	10	1	15
Computer skills	1	3		4
Knowledge of overall process	3		1	4
Communication skills		3		3
Math	3			3
Basic skills on other jobs		1	1	2
Reading	2			2
Writing	1	1		2
Other		2		2
Total	**14**	**20**	**3**	**37**

* Grimes column includes three sites: Rt.55 Operations, CBT, and Twain Ave.
Note: Results tabulated from open-ended type of question.

Cycle I
Were the educational areas that you wanted to work on addressed in the class?

	Yes	No	Other
Comdyne	4	3	1
Grimes-Twain	2	5	1
Hall Company	4	6	2
Total	**10**	**14**	**4**

Most respondents of Cycle I indicated that the areas in which they received training were concentrated in the areas of communication skills, learning styles, and problem solving skills. Most of the respondents indicated that they wanted the training to cover more job related subject areas, which is compatible to what they identified as areas of need at the beginning of the training.

On Cycle III, participants identified the three most important areas of need as being teamwork skills, communication skills, and problem solving. The post-training data available is not significant (one site only) to confirm the project's accomplishments in this area. However, considering that the project did not change its basic curriculum, it is admissible to assume that participants from Cycle III had the educational areas that they wanted to work on addressed in the training.

Cycle III
Needs Assessment input from project participants obtained from pre-training survey on Cycle III: "Please check all the areas you would like to work on this class."

Skills	Comdyne	Grimes Russell St.	Lewis Systems	Total
Teamwork skills	12	4	6	22
Communication skills	10	6	6	22
Problem solving skills	10	5	5	20
Knowledge of overall process	6	5	5	16
Total Quality Management (TQM)	6	4	5	15
Technical skills related to my job	6	4	5	15
Basic skills on other jobs	4	4	4	12
Statistical process controls (SPC)	3	3	3	9
Writing	1	3	3	7
Reading	2	1	2	5
Basic literacy	1	0	4	5
Total	**61**	**39**	**48**	**148**

Note: Results tabulated from multiple choice type of question.

Cycle III
Were the educational areas that you wanted to work on addressed in the class?

	Yes	No	Other
Comdyne	2	2	3

What was the workers' perceived satisfaction with their involvement in the training?

Items one (Do you think your company should provide classes for courses like this) and seven (were your overall expectations for this class met?) are utilized to assess the participants' level of satisfaction with their involvement in the training. On Cycle I, most respondents thought their companies should offer classes for courses like this. Most of the negative responses and some of the positive responses indicated were justified on the basis that the respondents would like classes more dedicated to job related skills.

Do you think your company should provide classes for courses like this?
Cycle I

	Yes	No	Other
Comdyne	6	2	1
Grimes-Twain	8	4	0
Hall Company	9	4	1
Total	**23**	**10**	**2**

Cycle III

	Yes	No	Other
Comdyne	6	2	0

Most participants that responded to the Cycle I post-training survey indicated that the training did not meet their expectations. Many respondents indicated that they were not able to respond to this question because they did not have much knowledge of what would be covered in the classes.
The majority of the Comdyne participants of Cycle III who responded to the survey indicated that the training met their overall expectations.

Were your overall expectations for this class met?

Cycle I

	Yes	No	Other
Comdyne	2	4	2
Grimes-Twain	2	7	3
Hall Company	2	9	2
Total	6	20	7

Cycle III

	Yes	No	Other
Comdyne	5	0	3

Training Impact

What was the foremen/supervisors' perceived satisfaction with the training?

To what extent did the intervention impact the worker's levels of productivity?

Aside from the analysis of the instructional components that the training anticipated as leading to increases in productivity, the evaluators designed a post-training survey for the participants and a pre- post-analysis of productivity data -- field information -- for each participating company (Appendix D). The data forms were sent to the supervisors/foremen for each of the sites. These data forms were not completed and mailed to the project evaluators on the specified deadline. The evaluators sent a follow up letter with more copies of the materials, extending the deadlines. Only one response was obtained from the project sites which could not be representative of the entire group.

Since participant companies did not provide the requested information, project evaluators interviewed foremen/supervisors at the completion of Cycle II and after the completion of Cycle III. Another source of information to answer this evaluation question are the pre- and post-training surveys to participants, on Cycles I and III.

Foremen/Supervisors Interview

The following is a summary of the foremen and supervisors responses regarding productivity gains from training (Cycles II and III).

Grimes CBT: Lay offs that occurred during the period of the training interfered with any effects the instruction may have had on participants. As reported by the CBT supervisor when asked about productivity changes before and after the training period: "People feel helpless. There isn't enough people to do the work at present time after all lay offs."

Grimes - Twain Ave.: "We didn't expect any [increase in productivity]. Goals in the program were not to come from individual effort but from process improvement. Maybe in the long term, as team effort helps improve the process, we will experience increases in productivity. Self confidence has improved, what helps to improve the process, as well as increase in communication across categories (e.g. design people obtaining input from assembler).

The Hall Company: According to the supervisor interviewed by the project evaluation team, the project contributed positively to increase productivity. The supervisor indicated that the training helped increase productivity because it generated:

- Increase in "general knowledge and understanding of own contribution and contribution of others;"
- "Better understanding of total picture, [employees] view job as part of overall function;"

- "Increased appreciation;"
- "Reduction in re-work."

The indicators of increased productivity pointed by the supervisor were: historical quality, increased team work, increased interactions (reduction of barriers), number of jobs done within estimated planned hours, scrap reduction, demonstrated understanding of company goals, and the use of English in customer reports.

LewiSystems: Parallel to the training period, LewiSystems experienced a re-design of its production lay-out. The supervisor indicated to the project evaluation team that such restructuring interfered directly with the company's overall productivity levels. Therefore, any productivity gains or losses gathered from pre- and post-training productivity data would not be necessarily an implication from the training. Based on this rational, the supervisor declined to comment on productivity gains or losses experienced by the participant workers during the training period.

Comdyne: "According to charting based on productivity and scheduled shipment, we observe a slow upward trend in productivity with respect to time. Overall, there is much better communication between job areas. Management is obtaining good ideas from introverted workers. As workers solve problems themselves, there are less problems to be mediated by managers."

Participants Post-training Surveys

The participants post-training surveys included two questions regarding productivity: (a) Do you think this class helped you do your job better?, and (b) Do you think this class helped improve production levels in your company? The project evaluators received post-training surveys from Cycles I and III only. From Cycle I, three sites only (Grimes Twain Ave, The Hall Company, and Comdyne) and from Cycle III, surveys from Comdyne only. Results show that participants do not think the training positively impacted companies' productivity. Responses were undecided with regard to whether training helped participants do their jobs better (please refer to the table below).

Cycle I: Do you think this class helped you do your job better?

	Yes	No
Comdyne	2	6
Grimes-Twain	7	4
Hall Company	8	6
Total	**17**	**16**

Cycle I: Do you think this class helped improve production levels in your company?

	Yes	No	Other
Comdyne	0	6	2
Grimes-Twain	2	7	
Hall Company	5	6	1
Total	**7**	**19**	**3**

On Cycle III, only Comdyne results are available:

Do you think this class helped you do your job better? Seven participants responded ***yes***, four participants responded ***no***.

Do you think this class helped improve production levels in your company? Three participants responded ***yes***, four participants responded ***no***.

Summary

Cycle I

On Cycle I, training participants (Grimes - Twain Ave, Comdyne, and the Hall Company) identified mostly technical skills related to their jobs as areas they would like to work on during the training. The training, however, provided more emphasis on subjects such as communication skills, team work, and problem solving. Most of the respondents indicated that their companies should provide courses like this as long as the courses would place more emphasis in the technical skills required for their job performance.

Participants at Grimes (Twain Ave.) and the Hall Company, at the end of Cycle I, indicated that they had a better understanding of how to use SPC on their jobs after the training. Participants at Comdyne, during the same Cycle, indicated that the training did not provide them with better understanding of SPC on their jobs. In terms of understanding TQM, only participants from the Hall Company indicated benefits received from the training on Cycle I.

The standardized tests indicated that, overall, participants improved their understanding and ability to use information contained in various textual materials (TALs, Prose) and their quantitative skills (ABLE). The ability of the participants to process information found on documents was not significantly affected by the training.

When asked if they were satisfied with the training, most participants (Grimes at Twain Ave, Comdyne, and the Hall Company) indicated that the classes did not meet their expectations. However, they explained that they did not know what to expect from the training. Participants mentioned that they would like to have been better informed of what materials this training would cover, and what they would learn from the training. Some participants mentioned that participation in such type of training should be voluntary, instead of allowing supervisors to select who should participate.

Overall, the participants (Grimes at Twain Ave., Comdyne, and the Hall Company) were undecided in the classes helped them do their job better. Most of them, at the end of Cycle I, thought that classes did not help improve production levels in their companies.

Cycle II

Information from Cycle II is very limited since participants did not return the post-training surveys. The analysis will be restricted to the standardized tests. On Cycle II, the average participant experienced a similar improvement as that of participants of Cycle I: the standardized tests indicated that, overall, participants improved their understanding and ability to use information contained in various textual materials (TALs, Prose) and their quantitative skills (ABLE). The ability of the participants to process information found on documents was not significantly affected by the training.

Cycle III

Cycle III includes standardized test scores, Comdyne's participants' opinion, and overall perceptions of the training by participants supervisors.

The analysis of the standardized tests indicate that on Cycle III, the aggregate of all companies moved to a higher proficiency level in the prose section of the TALs test (their understanding and ability to use information contained in various textual materials). Despite the aggregate of the participants experience growth on all three training cycles, on Cycle III this impact was more noticeable. The aggregate results on the other parts of the test did not show participants' improvements or were inconclusive.

Comdyne participants indicated that at the end of Cycle III they had a better understanding of how to use SPC on their jobs. Most of these participants indicated that they did not achieve a better understanding of how to use TQM in their jobs during the same period.

Most Cycle III participants indicated that the areas they would like to work on during the training were: teamwork skills, communication skills, and problem solving skills. We can observe here a difference from the

participants' identified areas on Cycle I, where participants indicated they would like to work in skills directly related to their jobs. Two assumptions can be made here: 1) participants from Cycles I and II presented to their colleagues the materials they had been learning in training; and 2) participants from Cycle III knew what materials were covered during training and chose to participate in the training.

Supervisors/Foremen

Supervisors at different sites had different opinions of what were the training impacts on their companies. The supervisor at Grimes (CBT), indicated that downsizing and subsequent lay off of employees, during the period covered by the training, interfered with any effects the training may have had on the participants.

At Grimes (Twain Ave.). the supervisor indicated that they were not expecting improvements in productivity in the short term. This supervisor indicated that in the long term, the training impacts of employee increased self-confidence and better communication across categories will increase team effort which could lead to improve the company's process, leading to increases in productivity.

The supervisor at the Hall Company indicated that the project contributed positively to increases in productivity by increasing the employees' general knowledge and understanding of the company and the process, by increasing their understanding of own and others' contribution to the process, by increasing employee appreciation of their work, and by helping reduce barriers across categories (improving employee's teamwork skills). The supervisor indicated the following indicators of increased productivity: historical quality, scrap reduction, use of English in customer reports.

At the LewiSystems, the supervisor indicated to us that during the training period the company experienced a re-design of its production lay-out which interfered in any impact that could be obtained from the training.

The supervisor at Comdyne observed a slow upward trend in productivity with respect to time. These results were obtained according to charting based on productivity and scheduled shipment.

Section 5.0
Conclusions

Conclusive Remarks

Based on the results of the evaluation, the following conclusions regarding the accomplishments of this project are offered:

1) Project staff obtained reliable sources of input and feedback to guide the implementation of the project, to make effective decisions regarding changes/modifications needed.

2) Except for the projected number of participants expected to be served. Goals 1 and 2 were implemented within the context of needs expressed by clients served by the project (project participants and foremen/supervisors)

3) Due to the numerous factors occurring within individual companies that were beyond the influence and control of this project, and the limited amount of feedback received from clients, it is not possible to conclude that the training contributed to a significant increase productivity leading to improved job maintenance, career advancement and decreased turnover or that Goal 3 was accomplished.

4. Project staff implemented a well designed model of instruction that can be used to facilitate learning, facilitate improved communication, problem solving and team building.

The curriculum model being developed by the project staff is based on the principles the project utilized during the training period. The curriculum model is expected to assimilate the complex workplace environment and utilize cognitive thinking and student-directed learning with cooperative education methods. The training also uses facilitated process approach to integrating knowledge and information rather that using rote teaching methods to teach skills in reading and mathematics. For most participants and supervisors, this translates into a training activity that helps participants improve communication, problem solving, and teamwork skills. This approach appears to be beneficial in cases where relatively small companies, or industrial sites, can attain improvement in the production process as employees increase cross-categorical communication and improve teamwork skills. This approach to placing more emphasis on general knowledge rather than on technical skills, may prove beneficial in small companies where most employees perform differentiated tasks. The evaluators believe that this basic teaching framework appears to be a model that can be replicated, with adequate training of trainers. It is flexible enough to accommodate a variety of content specific skills while emphasizing the skills needed by individuals who are required to work in groups or teams with others. Clearly, the approach is different from most instructional models, therefore it is essential that others understand what can be accomplished through this approach and that they buy into the approach.

Recommendations

Assessment and evaluation

One area of concern that should be addressed by Workplace Literacy Project designers in the need to incorporate assessment and evaluation instruments that more closely measure the content of training provided. Although the instruments used in this project (ABLE and TALS) were standardized measures typically used in such projects, they are not necessarily designed to measure changes in the concepts that were a major part of this training.

Clarification of Outcomes

It is recommended that this model or any workplace training provide participants with a clear understanding of the project's expectations and what learning outcomes participants can expect to result from their involvement. There was a clear change in the expectations expressed by Cycle I participants and Cycle III participants. Since this is a developmental/design project, it is expected that information and activities would improve throughout the course of the project. Future use of this model should however provide potential users with clear expectations.

Training for Teachers/Users

Many of the concepts incorporated in this model (metacognition, facilitated teaching, cooperative learning, etc.) are areas which are not commonly incorporated in teacher training programs. Therefore, the model should include a clearly defined process for training potential users including resources and references.

Section 6.0
Appendix

A. Participant Surveys (pre and post)

B. Foremen (pre and post)

C. Interview protocols

D. Productivity

E. Curriculum Outline

A. Participant Surveys (pre and post)

Workplace Literacy Project
Pre-Training Participant Survey Instrument

Four-digit number **Company/Location:**

Job Classification: **Training Cycle: I II III**

Please fill in the following information regarding this project:

1. Do you think your company should provide classes for courses like this? Why? or Why not?

2. What do you think you will gain from this class?

3. What are your personal goals for participating in this class?
4. What kinds of things do you read or write at work?
   read:

   write:

5. What kinds of things do you read or write when you are not at work?
   read:

   write:

6. What educational areas (math, reading, writing, communication skills) would you like to work on?

7. What job skills do you need to work on? (e.g. areas you have difficulties with, that would increase your productivity level, or help you understand how the system operates)

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8. Do you think this class can help you do your job better?
   Why? or Why not?

9. Do you think this class can help improve production levels in your company?
   Why? or Why not?

10. What jobs of your company do you think should be in this training?

11. Do you use Statistical Process Controls (SPC) on your job? Yes ____ No ____

12. Do you use Total Quality Management (TQM) on your job? Yes ____ No ____

13. Do you like where your class meets?

14. Is the amount of time spent in class? (check one)

    about right ( ) should be more ( ) should be less ( )

15. What job plans do you have for the next few years? (check all that apply)

( ) promotion ( ) retirement
( ) start own business ( ) transfer to another company
( ) transfer to another section within my company

16. How does more education and training help you with those plans?

Workplace Literacy Project
Participant Survey Instrument

Four-digit number **Company/Location:**

Job Classification: **Training Cycle: III**

Please fill in the following information regarding this project:

1. Do you think your company should provide classes for courses like this? Why? or Why not?

2. What do you think you will learn from this class?

3. Please check the alternative that better describe your opinion on the following statements:

   a. I like learning new concepts
   ( ) strongly agree ( ) agree ( ) neutral ( ) disagree ( ) strongly disagree

   b. I enjoy reading on my leisure time
   ( ) strongly agree ( ) agree ( ) neutral ( ) disagree ( ) strongly disagree

   c. I read (newspapers, magazines, books, etc.) on a daily basis
   ( ) strongly agree ( ) agree ( ) neutral ( ) disagree ( ) strongly disagree

   d. Reading is important to perform my activities at work
   ( ) strongly agree ( ) agree ( ) neutral ( ) disagree ( ) strongly disagree

   e. Good writing skills are necessary to perform my job
   ( ) strongly agree ( ) agree ( ) neutral ( ) disagree ( ) strongly disagree

   f. I would like my company to offer more training activities to employees
   ( ) strongly agree ( ) agree ( ) neutral ( ) disagree ( ) strongly disagree

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4. Please check all the areas you would like to work on this class?

( ) reading
( ) teamwork techniques
( ) writing
( ) problem solving skills
( ) communication skills
( ) basic literacy
( ) basic skills on other jobs of my company
( ) statistical process controls (SPC) or equivalent
( ) total quality management (TQM)
( ) knowledge of the overall process and activities of my company
( ) technical skills specifically related to my job description

5. Please check the alternative that best describe your opinion for each of the following statements:

a. In my opinion, **worker** to **worker** communication in my company is...
( ) very effective ( ) effective ( ) somewhat effective ( ) not effective

b. In my opinion, **worker** to **supervisor** communication in my company is...
( ) very effective ( ) effective ( ) somewhat effective ( ) not effective

c. **Communication skills** are very important to improve work conditions on my job.
( ) strongly agree ( ) agree ( ) neutral ( ) disagree ( ) strongly disagree

6. Do you think this class can help you do your job better?
Why? or Why not?

7. Do you think this class can help improve production levels in your company?
Why? or Why not?

8. What jobs of your company do you think should be in this training?

9. What is your definition of quality?

10. How does your company measure quality?

11. Do you interpret statistical process charts on your job?
    If so, which ones do you use?

12. In regard to your job, what do you see yourself doing in the next 5 years?

13. How does more education and training can help you with what you expect to be doing in the next 5 years?

14. Do you like where your class meets?

15. Is the amount of time spent in class? (check one)

    about right ( ) should be more ( ) should be less ( )

Workplace Literacy Project
Post-Training Participant Survey Instrument

Four-digit number **Company/Location:**

Job Classification: **Training Cycle:** I II III

Please fill in the following information regarding this project:

1. Do you think your company should provide classes for courses like this? Why? or Why not?

2. What do you think you gained from this class?

3. What personal goals did you achieve from participating in this class?

4. Were the educational areas that you wanted to work on addressed in the class?

5. What job skills do you still need to work on? (e.g. areas you have difficulties with, that would increase your productivity level, or help you understand how the system operates)

6. Identify at least three skills or behaviors that you think have been improved as a result from this training.

7. Were your overall expectations for this class met?

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8. How could this class better meet your training needs?

9. Do you think this helped you do your job better?
   Why? or Why not?

10. Do you think this class helped improve production levels in your company?
    Why? or Why not?

10. What jobs of your company do you think should be in this training?

11. Do you have a better understanding of how to use Statistical Process Controls (SPC) on your job? Yes ____ No ____

12. Do you use Total Quality Management (TQM) on your job? Yes ____ No ____

13. Did you like where your class met?

14. Was the amount of time spent in class? (check one)

    about right ( ) should be more ( ) should be less ( )

15. What job plans do you have for the next few years? (check all that apply)

( ) promotion ( ) retirement
( ) start own business ( ) transfer to another company
( ) transfer to another section within my company

16. How does this training help you with those plans?

B. Foremen (pre and post)

Foremen/Supervisors Survey Instrument

Name _____ SSN (last four digits) _____

Department (section) _____ Training Cycle I

Date: _____ Company: _____

1. Do you think the classes will help increase productivity in your section of the company?

   Yes ( ) No ( )

2. How you think the classes can contribute to increase your company's overall productivity? (e.g. by providing cross-training skills, basic work skills, TQM/SPC skills, by improving career advancement and job maintenance skills, self-esteem, etc.)

3. What would be indicators of greater productivity in your section?

4. What critical skills do the participants in your section of the company need to gain to better perform their tasks?

5. What critical skills do you think the participants from your company will gain from their involvement in the literacy program?

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6. What specific behaviors do you observe in the workers?

	Top worker	Average worker	Poor worker
_____ job classification			
_____ job classification			
_____ job classification			
_____ job classification			

7. What changes in participants' behavior do you expect to observe as a result of the training?

8. Which of the following type of workers would you like to see participating in the program?

   top workers ( ) low performance workers ( ) all workers ( )

Why?

9. How will you measure improvements in participants' performance as a result of the program?

10. What other job classifications do you think would best benefit form this training?

11. How do you think the participants' training schedule (2 hours, 2 days per week) affected the productivity rate of the individual?

    Positively ( ) Negatively ( )

12. What other opportunities for training does your company provide for employees?

Foremen/Supervisors Survey Instrument

Name _____ SSN (last four digits) _____

Department (section) _____ Training Cycle I

Date: _____ Company: *Comdyne*

1. Do you think the classes helped increase productivity in your section of the company?

   Yes ( ) No ( )

If your answer was "No", go to question 4.

2. How you think the classes contributed to increase your company's overall productivity? (e.g. by providing cross-training skills, basic work skills, TQM/SPC skills, by improving career advancement and job maintenance skills, self-esteem, etc.)

3. What were indicators of greater productivity in your section?

4. Identify the critical skills that you think the participants from your company gained from their involvement in the literacy program?

Communication skills	( )
Problem solving skills	( )
Knowledge of the overall	( )
Teamwork	( )
Basic literacy	( )
Basic skills in other jobs	( )
Reading	( )
Math	( )
SPC	( )
TQM	( )

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5. Please check the specific behaviors you have observed in the workers who participated in the training and that you believe were positively affected by the training?

Detailing

- demonstrates knowledge of the overall process ( )
- takes initiative ( )
- needs less direction and supervision ( )
- demonstrates effective communication skills ( )

Sanding

- demonstrates knowledge of the overall process ( )
- minimizes scrap rate ( )
- demontrates effective communication skills ( )

Pressure Testing

- demonstrates knolwedge of valve numbers ( )
- demonstrates knowledge of PRD numbers ( )
- demonstrates knowledge of pressures needed ( )
- operates equipment for tests efficiently ( )
- demonstrates basic knowledge ( )
- demonstrates knowledge of the overall process ( )
- demonstrates effective communication skills ( )

Ring Winding

- demonstrates appropriate reading skills (blueprint) ( )
- demonstrates appropriate math skills ( )
- demonstrates effective communication skills ( )
- demonstrates knowledge of scales (number conversion) ( )

Lay Up

- demonstrates appropriate reading skills (blueprint) ( )
- demonstrates appropriate problem solving skills ( )
- demonstrates effective communication skills ( )

6. Do you believe that all workers should be involved in the program?

7. What measures will you use to determine improvements in participants' performance as a result of the program?

8. How do you think the participants' training schedule (2 hours, 2 days per week) affected the productivity rate of the individual?

   Positively ( ) Negatively ( )

Foremen/Supervisors Survey Instrument

Name _____ SSN (last four digits) _____

Department (section) _____ Training Cycle 1

Date: _____ Company: ***Hall Company***

1. Do you think the classes helped increase productivity in your section of the company?

   Yes ( ) No ( )

If your answer was "No", go to question 4.

2. How you think the classes contributed to increase your company's overall productivity? (e.g. by providing cross-training skills, basic work skills, TQM/SPC skills, by improving career advancement and job maintenance skills, self-esteem, etc.)

3. What were indicators of greater productivity in your section?

4. Identify the critical skills that you think the participants from your company gained from their involvement in the literacy program?

Communication skills	( )
Problem solving skills	( )
Knowledge of the overall	( )
Teamwork	( )
Basic literacy	( )
Basic skills in other jobs	( )
Reading	( )
Math	( )
SPC	( )
TQM	( )

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5. Please check the specific behaviors you have observed in the workers who participated in the training and that you believe were positively affected by the training?

Die Cutting

- demonstrates uderstanding of blueprints ( )
- understands and appropriately utilizes job router ( )
- demonstrates knowledge of tools and materials ( )
- set up time is minimal ( )
- demonstrates problem solving skills ( )
- practices high safety procedures ( )
- uses effective communication skills ( )
- minimizes scrap rate ( )

Assembly

- identifies appropriate materials ( )
- understands and follows written instructions ( )
- practices high safety procedures ( )
- performs duties in a timely manner ( )
- demonstrates ability to perform several tasks in the area ( )
- provides clearly written communication of problems to engineering ( )
- verbal communication to others in group is appropriate and clear ( )
- demonstrates problem solving skills ( )
- performs with limited or no assistance / supervision ( )

Screen Printer

- set up time is minimal ( )
- efficiently matches numbers of job with materials ( )
- demonstrates high quality level of inspection ( )
- utilizes problem solving skills ( )
- practices high safety procedures ( )
- uses effective decision making in determination of quality of products ( )
- demonstrates ability to analyze problems as appropriate for the task ( )
- demonstrates ability to handle complex jobs ( )
- scrap rate is reduced ( )

Drafts Person

- demonstrates skills in estimation ( )
- translates drawings for tool development ( )
- effectively communicates with costumers ( )
- utilizes written communication skills effectively ( )
- demonstrates knowledge of manufacturing process ( )
- demonstrates effective decision making skills ( )
- performs quality / accurate / computerized work ( )
- needs less supervision ( )

6. Do you believe that all workers should be involved in the program?

7. What measures will you use to determine improvements in participants' performance as a result of the program?

8. How do you think the participants' training schedule (2 hours, 2 days per week) affected the productivity rate of the individual?

   Positively ( ) Negatively ( )

Foremen/Supervisors Survey Instrument

Name _____ SSN (last four digits) _____

Department (section) _____ Training Cycle I

Date: _____ Company: *LewiSystems*

1. Do you think the classes helped increase productivity in your section of the company?

   Yes ( ) No ( )

If your answer was "No", go to question 4.

2. How you think the classes contributed to increase your company's overall productivity? (e.g. by providing cross-training skills, basic work skills, TQM/SPC skills, by improving career advancement and job maintenance skills, self-esteem, etc.)

3. What were indicators of greater productivity in your section?

4. Identify the critical skills that you think the participants from your company gained from their involvement in the literacy program?

Communication skills	( )
Problem solving skills	( )
Knowledge of the overall	( )
Teamwork	( )
Basic literacy	( )
Basic skills in other jobs	( )
Reading	( )
Math	( )
SPC	( )
TQM	( )

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5. Please check the specific behaviors you have observed in the workers who participated in the training and that you believe were positively affected by the training?

Molder

- demonstrates increased motivation ( )
- requires minimal direction to do job ( )
- demonstrates knowledge of tool preparation ( )
- stays one step ahead on the process ( )
- demonstrates knowledge of the process from beginning to end ( )
- requires minimal time to learn ( )

Lead Operator

- demonstrates ability to stay with the task ( )
- demonstrates knowledge of company's goals ( )
- demonstrates effective verbal and written communication skills ( )
- demonstrates understanding of quality goals ( )
- uses problem solving and decision making skills ( )
- demonstrates knowledge of the process (sequence of tasks) ( )
- performs tasks with less assistance/supervision ( )

Value Added

- demonstrates high motivation ( )
- utilizes effective communication skills with vendors, management and co-workers ( )
- requires less supervision ( )
- demonstrates appropriate level of performance ( )
- demonstrates understanding of the process ( )

6. Do you believe that all workers should be involved in the program?

7. What measures will you use to determine improvements in participants' performance as a result of the program?

8. How do you think the participants' training schedule (2 hours, 2 days per week) affected the productivity rate of the individual?

   Positively ( ) Negatively ( )

Foremen/Supervisors Survey Instrument

Name _____ SSN (last four digits) _____

Department (section) _____ Training Cycle I

Date: _____ Company: ***Grimes - CBT***

1. Do you think the classes helped increase productivity in your section of the company?

   Yes ( ) No ( )

If your answer was "No", go to question 4.

2. How you think the classes contributed to increase your company's overall productivity? (e.g. by providing cross-training skills, basic work skills, TQM/SPC skills, by improving career advancement and job maintenance skills, self-esteem, etc.)

3. What were indicators of greater productivity in your section?

4. Identify the critical skills that you think the participants from your company gained from their involvement in the literacy program?

Communication skills	( )
Problem solving skills	( )
Knowledge of the overall	( )
Teamwork	( )
Basic literacy	( )
Basic skills in other jobs	( )
Reading	( )
Math	( )
SPC	( )
TQM	( )

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5. Please check the specific behaviors you have observed in the workers who participated in the training and that you believe were positively affected by the training?

Contract Assistant

- performs functions with less/little direction ( )
- willing to take control, learn new skills ( )
- needs less assistance from peers ( )

Contract Administration

- makes decisions appropriately ( )
- improved written/verbal communication skills ( )
- takes initiative ( )
- needs less direction and supervision ( )

Senior Business Administrator

- demonstrates analytical thought process ( )
- conceptualizes easily ( )
- makes appropriate decisions ( )
- demonstrates ability to plan and implement strategies ( )
- demonstrates vision of the whole picture ( )
- takes initiative ( )
- has shown willingness to expand knowledge ( )

Team Member

- takes initiative ( )
- assists others ( )
- willing to volunteer, go beyond what is expected ( )
- communication skills ( )

6. Do you believe that all workers should be involved in the program?

7. What measures will you use to determine improvements in participants' performance as a result of the program?

8. How do you think the participants' training schedule (2 hours, 2 days per week) affected the productivity rate of the individual?

   Positively ( ) Negatively ( )

Foremen/Supervisors Survey Instrument

Name _____ SSN (last four digits) _____

Department (section) _____ Training Cycle 1

Date: _____ Company: ***Grimes - Twain Ave.***

1. Do you think the classes helped increase productivity in your section of the company?

   Yes ( ) No ( )

If your answer was "No", go to question 4.

2. How you think the classes contributed to increase your company's overall productivity? (e.g. by providing cross-training skills, basic work skills, TQM/SPC skills, by improving career advancement and job maintenance skills, self-esteem, etc.)

3. What were indicators of greater productivity in your section?

4. Identify the critical skills that you think the participants from your company gained from their involvement in the literacy program?

Communication skills	( )
Problem solving skills	( )
Knowledge of the overall	( )
Teamwork	( )
Basic literacy	( )
Basic skills in other jobs	( )
Reading	( )
Math	( )
SPC	( )
TQM	( )

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5. Please check the specific behaviors you have observed in the workers who participated in the training and that you believe were positively affected by the training?

Analyst

- efficiency levels ( )
- utilization levels ( )
- analysis time ( )
- utilizes problem solving skills ( )
- demonstrates ability to work in teams ( )
- demonstrates leadership ( )
- requires less supervision from co-workers / supervisors ( )
- communication skills are effective ( )

Repair Technician

- efficiency levels ( )
- utilization levels ( )
- analysis time ( )
- demonstrates interpretation skills ( )
- demonstrates knowledge of quality control ( )
- utilizes effective decision making skills ( )
- demonstrates problem solving skills ( )
- demonstrates ability to work in teams ( )
- requires less supervision from co-workers ( )
- communication skills are effective ( )

Inspector

- appropriately interprets regulations ( )
- effectively applies regulations (Federal and customer requests) ( )
- demonstrates initiative ( )
- demonstrates ability to work in teams ( )
- efficiency levels ( )
- utilization levels ( )
- demonstrates understanding of SPC/TQM ( )

Receiving

- demonstrates appropriate reading skills ( )
- demonstrates appropriate typing skills ( )
- communication skills are effective ( )
- uses question & answer appropriately ( )
- demonstrates interpretation skills ( )
- demonstrates ability to work in teams ( )
- demonstrates memory skills ( )
- problem solves effectively ( )

6. Do you believe that all workers should be involved in the program?

7. What measures will you use to determine improvements in participants' performance as a result of the program?

8. How do you think the participants' training schedule (2 hours, 2 days per week) affected the productivity rate of the individual?

   Positively ( ) Negatively ( )

C. Interview protocols

ADMIN. **Interview**

1. What is the current organizational structure for the project?

2. What are the roles of key project staff?

3. How will this reorganization benefit the project?

4. How are support resources (technical resources) being used in the overall management and implementation of the project?

5. What progress is being made towards the development and documentation of the training model?
   what mechanisms are being used to document the training model?
   how accurate are the records?
   how comprehensive is the information?

6. How much effort is being devoted toward planning activities in relation to class content, processes, materials, teacher feedback? (% of time)

7. What changes have been implemented (specific to cycles II & III) in the training process, and communication systems among project staff and between project staff and companies?

8. Do you think the project is accomplishing the stated objectives? Explain.

9. Does the content of this training contribute to establishing a high productivity environment? Yes, no, explain.

10. Does the content of this training contribute to job maintenance and or career advancement? Yes, no, explain

11. Does the training curriculum improved basic work skills and TQM/SPC processes? Yes, no, explain

12. Does the training curriculum contribute to workplace skills development? Yes, no, explain

13. What activities are being implemented to continue the provision of services to existing partners and to other business in the county?

14. What have you learned from this implementation that would tell you where this model could better be applied?

15. What contributions has the problem solving committee made to the model?

16. What would you change in terms of project implementation, curriculum and process?

Teacher/Facilitator Interview

I - Class Preparation

1. What activities have you engaged in to develop/strengthen your skills as teacher/facilitator of classes? (between cycles I & II and II & III)

2. What do you perceive are your strengths/weaknesses now as opposed to initially? (how this changed from cycle I to present)

3. What do you do conceptually to prepare for classes?

4. What specific methodology is used to impact knowledge? (lecture, demonstration, small group activities, etc.)

5. What is the source of materials used in class? (workplace materials, commercial, self-developed)

II - Classroom activities/Implementation

6. What are the major content foci for the class? Is it the same for all companies? What are the common content strands across companies and what are specific content strands for each site?

7. To what extent TQM/SPC are a part of the curriculum? (if it was changed, what were the reasons for such changes?)

8. How decisions are made in order to develop a sequence to which concepts are presented?

9. Is there a consistent format to develop lesson plans? Objectives are individualized or follow a large group focus?

10. What is the class framework? (example of class structure)

11. How much of overall class time is spent on each concept/application? Indicate how job responsibilities of the participants determine the emphasis given to concept/applications.

- Check the sites to which any concept/application is used more frequently or given more emphasis.
- Indicate your perceptions on applicability of concepts/applications to the different worksites (check the ones where information is more applicable/helpful)

Concept	Overall (%)	Grimes (TA)		Grimes (Rt.55)		Grimes (CBT)		Hall		Comdyne		Lewis	
Problem Solving													
Learning styles													
Communications (verbal)													
Communications (written)													

Application	Overall	Grimes (TA)		Grimes (Rt.55)		Grimes (CBT)		Hall		Comdyne		Lewis	
Lecture													
Demonstration													
Practice													
Small group activities													
Workplace examples													

12. Under what conditions are unplanned activities/concepts used? How frequent does this happen? How much time do you spend on activities not covered in the lesson plan?

13. What other concepts need to be a part of this model based on any feedback you may have obtained from participants?

III. Informal Evaluation

14. How do you measure learning outcomes? How do you know when learning has been achieved? (considering standardized tests don't measure learning outcomes)

15. How do you use this information to design future lesson plans?

16. What environmental factors (site, project, and participant related) have impacted your classes and in what way?

17. What is your overall perception of the utility/applicability of the information/knowledge given by this project to the participant companies.

IV - Overall Project Management

18. Do you think the project is accomplishing the stated objectives? Yes, no, explain.

19. Does the content of this training contribute to establishing a high productivity environment? Yes, no, explain.

20. Does the content of this training contribute to job maintenance and or career advancement? Yes, no, explain.

21. Does the training curriculum improved basic work skills and TQM/SPC processes? Yes, no, explain.

22. Does the training curriculum contribute to workplace skills development? Yes, no, explain

23. What activities are being implemented to continue the provision of services to existing partners and to other business in the county?

24. How much time has project staff spent on helping on your perceived needs to improve what you are doing? (assistance, training, etc.)

25. Have there been any issues from sites/supervisors or management? How these issues have been handled by project staff?

26. Are there any areas of this project that you would recommend changing? What areas? How?

Foremen Interview

1. What is your overall perception of the effectiveness of the project?

   Did you participate on supervisors meetings with project staff?
   Do you believe that the project is accomplishing its goals and objectives?

2. What is your sense of what the participants are learning?

3. Have you observed that any participants from your site have applied what they learned?
   In what way?
   - problem solving
   - communication
   - job task related skills

4. Describe any noticeable changes in productivity that you have observed in employees who participated in this training cycle

5. Do you feel that gains made by participant merits continuation of this type of learning opportunity?

6. Do you feel that any follow up on extended learning opportunity should be made available to employees?

   Do you feel that a similar learning opportunity should be made available for foremen/supervisors and other company managers?

7. Comments/suggestions

D. Productivity

Workplace Literacy Project
Comdyne

Participants Productivity Data

General information on what data to be collected:

***Pre and post data*:** Baseline data has to be collected from period just before classes started. Post class data should be collect from a period of at least a month after each cycle of classes was over.

***Sample size*:** at least 30 observations on each variable for each participant (e.g. 30 individual time charts, one month of timeliness information - i.e. late days, absenteeism, etc.).

***Representativeness of the sample*:** sample has to cover periods that are **similar to all workers** and that are **similar for baseline and after class** information. That is, participant data has to be consistent (same time of the day, or the entire same month for all workers)

***Individual data*:** all data has to be collected for **every** participant, individually. Arrangements will have to be made in the cases were individual information is not available. Such arrangements could be to allow project evaluators to measure performance; to engage participant team in problem solving to find ways to obtain the data; to obtain information on how many members of a job classification (or how many job classifications) participated in the project and how many members (or job classifications) did not.

Job Classification	Suggested data to be collected
Detailing	• Timeliness • Daily production • Indicators of quality
Sanding	• Timeliness • Daily production • Scrap rate
Pressure Testing (valvers)	• Timeliness • Daily production
Ring Winding (winders)	• Timeliness (attendance) • Daily production • Scrap rate
Lay Up	• Timeliness • Daily production

If you have any questions, please contact **Cesar Dagord at (614) 447-0844, FAX (614) 447-9043**

Data Collection Sheet

Project Participants Productivity Data

Comdyne

Job Classification:
( ) Detailing
( ) Sanding
( ) Valvers
( ) Winders
( ) Lay Up

Cycle:
( ) Cycle I
( ) Cycle II
( ) Cycle III

Period:
( ) pre-training
( ) post-training

ID number
_____
(4 digit)

Date	Timeliness (attendance, days early/late)	Scrap rate	Daily Production	Indicators of Quality	Other (specify)

Workplace Literacy Project
Grimes - CBT

Participants Productivity Data

General information on what data to be collected:

***Pre and post data*:** Baseline data has to be collected from period just before classes started. Post class data should be collect from a period of at least a month after each cycle of classes was over.

***Sample size*:** at least 30 observations on each variable for each participant (e.g. 30 individual time charts, one month of timeliness information - i.e. late days, absenteeism, etc.).

***Representativeness of the sample*:** sample has to cover periods that are **similar to all workers** and that are **similar for baseline and after class** information. That is, participant data has to be consistent (same time of the day, or the entire same month for all workers)

***Individual data*:** all data has to be collected for **every** participant, individually. Arrangements will have to be made in the cases were individual information is not available. Such arrangements could be to allow project evaluators to measure performance; to engage participant team in problem solving to find ways to obtain the data; to obtain information on how many members of a job classification (or how many job classifications) participated in the project and how many members (or job classifications) did not.

Job Classification	Suggested data to be collected
Contract Assistant	
Contract Administration	
Senior Business Administrator	
Team Member	

If you have any questions, please contact **Cesar Dagord at (614) 447-0844, FAX (614) 447-9043**

Data Collection Sheet

Project Participants Productivity Data

Grimes - CBT

Job Classification:
( ) Contract Assistant
( ) Contract Administrator
( ) Sr. Business Administrator
( ) Team member

Cycle:
( ) Cycle I
( ) Cycle II
( ) Cycle III

Period:
( ) pre-training
( ) post-training

ID number
_____
(4 digit)

Indicate productivity indicator that is consistent for pre- and post- periods and within the period collected.

Date	Productivity indicator 1:	Productivity indicator 2:	Productivity indicator 3:	Other (specify)	Other (specify)

Workplace Literacy Project
Grimes - Twain Ave.

Participants Productivity Data

General information on what data to be collected:

Pre and post data: Baseline data has to be collected from period just before classes started. Post class data should be collect from a period of at least a month after each cycle of classes was over.

Sample size: at least 30 observations on each variable for each participant (e.g. 30 individual time charts, one month of timeliness information - i.e. late days, absenteeism, etc.).

Representativeness of the sample: sample has to cover periods that are **similar to all workers** and that are **similar for baseline and after class** information. That is, participant data has to be consistent (same time of the day, or the entire same month for all workers)

Individual data: all data has to be collected for **every** participant, individually. Arrangements will have to be made in the cases were individual information is not available. Such arrangements could be to allow project evaluators to measure performance; to engage participant team in problem solving to find ways to obtain the data; to obtain information on how many members of a job classification (or how many job classifications) participated in the project and how many members (or job classifications) did not.

Job Classification	Suggested data to be collected
Analyst	• Efficiency level • Utilization levels • Analysis time
Repair Technician	• Efficiency level • Utilization levels • Analysis time
Inspector	• Efficiency • Utilization • Standardized quantitative tests (obtain 4-digit numbers of these participants to use quantitative tests as indicator of productivity)
Receiving	• Use battery of standardized tests (obtain 4-digit numbers of these participants and use standardized tests as productivity index)

If you have any questions, please contact **Cesar Dagord at (614) 447-0844, FAX (614) 447-9043**

Data Collection Sheet

Project Participants Productivity Data

Grimes - Twain Ave.

Job Classification:	**Cycle:**	**Period:**	**ID number**
( ) Analyst	( ) Cycle I	( ) pre-training	_____
( ) Repair Technician	( ) Cycle II	( ) post-training	(4 digit)
( ) Inspector	( ) Cycle III		

Date	**Efficiency Level**	**Utilization Level**	**Analysis Time**	**Other** (specify)	**Other** (specify)

Workplace Literacy Project
Hall Company

Participants Productivity Data
General information on what data to be collected

***Pre and post data*:** Baseline data has to be collected from period just before classes started. Post class data should be collect from a period of at least a month after each cycle of classes was over.

***Sample size*:** at least 30 observations on each variable for each participant (e.g. 30 individual time charts, one month of timeliness information - i.e. late days, absenteeism, etc.).

***Representativeness of the sample*:** sample has to cover periods that are **similar to all workers** and that are **similar for baseline and after class** information. That is, participant data has to be consistent (same time of the day, or the entire same month for all workers)

***Individual data*:** all data has to be collected for **every** participant, individually. Arrangements will have to be made in the cases were individual information is not available. Such arrangements could be to allow project evaluators to measure performance; to engage participant team in problem solving to find ways to obtain the data; to obtain information on how many members of a job classification (or how many job classifications) participated in the project and how many members (or job classifications) did not.

Job Classification	Suggested data to be collected
Cutters	• Timeliness (average days early or late) • Scrap rate report • Percent of jobs on time • Productivity (actual hours v. planned hours)
Assemblers	• Timeliness (average days early or late) • Scrap rate report • Percent of jobs on time • Productivity (actual hours v. planned hours)
Screen Printers	• Timeliness (average days early or late) • Scrap rate report • Percent of jobs on time • Productivity (actual hours v. planned hours)
Drafts Person	• Timeliness (average days early or late) • Percent of jobs on time

If you have any questions, please contact **Cesar Dagord at (614) 447-0844, FAX (614) 447-9043**

Data Collection Sheet
Project Participants Productivity Data
Hall Company

Job Classification:
( ) Cutter
( ) Assembler
( ) Drafts Person
( ) Screen Printer

Cycle:
( ) Cycle I
( ) Cycle II
( ) Cycle III

Period:
( ) pre-training
( ) post-training

ID number
_____
(4 digit)

Date	Timeliness (average days early/late)	Scrap Rate	Productivity (actual hours v. planned hours)	Percent of Jobs on Time	Other (specify)

Workplace Literacy Project
Lewis Systems

Participants Productivity Data

General information on what data to be collected:

Pre and post data: baseline data has to be collected from a period just before classes started. Post class data should be collect from a period of at least a month after each cycle of classes was over.

Sample size: at least 30 observations on each variable for each participant (e.g. 30 individual time charts, one month of timeliness information - i.e. late days, absenteeism, etc.).

Representativeness of the sample: sample has to cover periods that are **similar to all workers** and that are **similar for baseline and after class** information. That is, participant data has to be consistent (same time of the day, or the entire same month for all workers, etc.)

Individual data: all data has to be collected for **every** participant, individually. Arrangements will have to be made in the cases were individual information is not available. Such arrangements could be to allow project evaluators to measure performance; to engage participant team in problem solving to find ways to obtain the data; to obtain information on how many members of a job classification (or how many job classifications) participated in the project and how many members (or job classifications) did not.

Job Classification	Suggested data to be collected
Maintenance	• Observation of paper work activities: data could be a sample (pre/post classes) of the paper work.
Press Operators	Graph charts (time charted for each worker). Collect graphs from before and after classes were taken.
Molder	• Reading skills: obtain 4-digit number of these participants: will use standardized tests as a substitute for "productivity" data for these participants.
Secondary	Time spent on each job. Data can best be obtained by observation (closest supervisor of worker?).

If you have any questions, please contact **Cesar Dagord at (614) 447-0844, FAX (614) 447-9043**

Data Collection Sheet

Project Participants Productivity Data

LewiSystems

Job Classification:
( ) Press Operators
( ) Secondary

Cycle:
( ) Cycle I
( ) Cycle II
( ) Cycle III

Period:
( ) pre-training
( ) post-training

ID number
_____
(4 digit)

Date	**Graph Charts** (time charted)	**Time spent on each job** (observation)	**Other Indicators of Quality** (specificy)	**Other** (specify)	**Other** (specify)

E. Curriculum Outline

FAX to:
Carolyn Caston

Workplace Literacy Curriculum

Explanation Development Thematic Units/Lesson Plan

Explanation

This project was based on neuropsychological brain behavior research that indicates that all people can learn best in a complex, natural environment. Neuroscience identifies differences in construction of memory and methods of building knowledge systems. The brain learns through patterns, feelings, wants, choice, reasoning, moral values and other "things of the mind" (Roger Sperry, 1986, Nobel Prize Laureate responsible for the initial "split brain" research). Learning is equated with change in that the brain stores patterns with complex connections of such quality and control as to be accessed appropriately in new learning situations.

In the past, learning specific facts to be remembered and produced in predictable situations was adequate. Today, global economic concerns demand employees who demonstrate a high level of competence to deal with complexity and change. This demand dictates that the traditional methods of linear, teacher-directed training be allowed to change. The naturally complex work environment provides excellent content for cognitive, student-directed learning.

Curriculum suited to the workplace needs a marriage of information and situations available in the workplace with cognitive thinking and cooperative education methods. The teacher/coach and the class participants monitor the content and the process of learning. The participants gain a sense of control over learning that translates to all part of life.

Development

The process of developing the Workplace grant curriculum involved the following steps:

- *identify and develop thematic units
- *selection of units appropriate to each site
- *specific design of lesson plans for each site, job classification and individual learner

The Problem Solving Committee provided the expertise to identify topics relevant to current and future business needs. The committee of company executives, class participants and the Workplace Team were able to collaborate on these issues. The topics chosen by this group were Cycle Time, Statistical Processing Control, Quality Issues and _____skills.

The topics were developed into thematic units by the Workplace Team. The content, thinking and social/communication skills of each unit were identified and prioritized.

Customizing the curriculum for the particular site, job classification and individual learner involved numerous steps. Company personnel on the Problem Solving Committee prioritized which units were to be taught at each site. The Workplace Team conducted informal Literacy Task Analysis of each new job classification to familiarize themselves

with the job demands. Individual lesson plans were initially designed from the above information and the results of the standardized pretests. Class participants completed Literacy Task Analysis of their own job and this information was also used to direct the lesson planning. Most of the classroom content was derived from workplace materials. Linear, predeveloped worksheets and exercises were never untilized in this curriculum.

The format for the lesson plan development was consistent throughout the above process. The content, thinking and social/communication skills involved in each subskill were identified on the the thematic units, the Team LTA's and the participant LTA's. The information was gathered from company executives, class participants, and the Workplace Team.

Lesson Plans/Classroom Management

Each lesson was introduced with metacognitive awareness and strategy activities. Application of these skills was then included in cooperative and discovery learning activities based on common life experiences. The final part of each lesson involved transfer of these skills to the workplace through additional cooperative education activities.

During the course of the teaching cycle, less time was devoted to learning metacognitive skills and strategies and more time was spent on application. Teachers were prepared to direct teach only an average of 20 minutes and to use facilitator/coaching skills for the remainder of the 2 hour class session.

Elizabeth will be elaborating on each detail of this summary. She will also show a breakdown of the subskills involved in each of the thematic units.